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AWS

HISTORY OF THE 4TH WEATHER GROUP

Andrews Air Force Base, Washington 25, D. C.

1 July 1960 - 31 December 1960

Edited by

Captain Clayton L. Hogg

25 APR 1991

RCS: AU-05

Air Weather Service
Military Air Transport Service
United States Air Force

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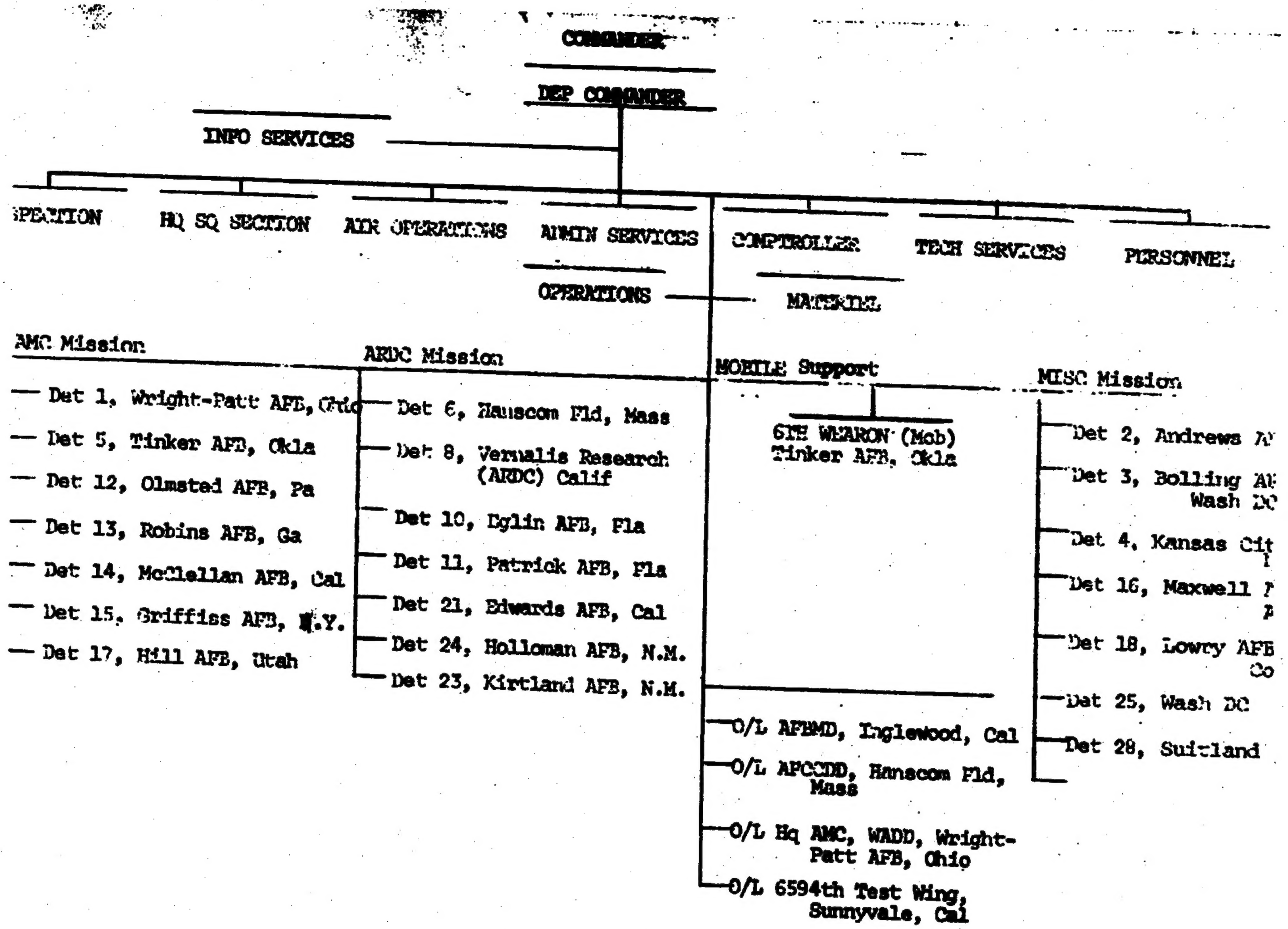
COMMANDER
DEP COMMANDER
INFO SERVICES
SPECTION
HQ SQ SECTION
AIR OPERATIONS
ADMIN SERVICES
COMPTROLLER
TECH SERVICES
PERSONNEL
OPERATIONS
MATERIEL
AMC Mission
Det 1, Wright-Patt AFB, Ohio
Det 5, Tinker AFB, Okla
Det 12, Olmsted AFB, Pa
Det 13, Robins AFB, Ga
Det 14, McClellan AFB, Cal
Det 15, Griffiss AFB, N.Y.
Det 17, Hill AFB, Utah
ARDC Mission
Det 6, Hanscom Fld, Mass
Det 8, Vernalis Research (ARDC) Calif
Det 10, Eglin AFB, Fla
Det 11, Patrick AFB, Fla
Det 21, Edwards AFB, Cal
Det 24, Holloman AFB, N.M.
Det 23, Kirtland AFB, N.M.
MOBILE Support
6TH WEARON (Mob) Tinker AFB, Okla
O/L AFBMD, Inglewood, Cal
O/L AFCCDD, Hanscom Fld, Mass
O/L Hq AMC, WADD, Wright-Patt AFB, Ohio
O/L 6594th Test Wing, Sunnyvale, Cal
MISC Mission
Det 2, Andrews
Det 3, Bolling
Wash DC
Det 4, Kansas Cit
Det 16, Maxwell
Det 18, Lowry AFB
Co
Det 25, Wash DC
Det 28, Suitland

FOREWORD

This unclassified history covers the operation of the 4th Weather Group for the period 1 July 1958 through 31 December 1958. The first part of the history deals with a discussion of internal problems and programs. Following this are the support programs for the Air Weather Service Command, Air Research and Development Command, the Air Force Headquarters, and a section on Miscellaneous Support Programs. The 6th Weather Squadron History is included in Appendix I.

As a part of this Unit's permanent historical record, this report is complete, accurate, and prepared in accordance with regulations.

[illegible] H. [illegible]
Colonel, USAF
Commander

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CHAPTER I

INTRODUCTION

Mission

The mission of the 4th Weather Group is to provide or arrange for:

a. Meteorological service necessary to support the Air Research and Development Command, Air University, Air Materiel Command, Headquarters Command, USAF Intelligence Community, and special projects as directed by Commander, AWS.

b. Mobile or fixed meteorological service in support of special operations of the USAF and USA and such other operations as directed by Commander, AWS.

c. Fulfillment of validated requests of the U. S. Army in support of its research and development program.

Mission Change in ARDC Support

A revision of ARDC Regulation 80-7 governing the provision of environmental support within ARDC was proposed, coordinated and forwarded to the ARDC Administrative office for publication in November 1960. This regulation established the Staff Meteorologists with assistance in implementing their procedures under the regulation.

Organization Changes

There was one organization change worthy of note during the period of this report. The transfer of Det 19, 4th Weather Group, Dugway Proving Ground, Utah to the 16th Weather Squadron, 2nd Weather Group, had been approved by Hq USAF, effective 3QFY61.

However, to make a more orderly transfer of responsibility, operational control of this detachment was transferred, with the approval of AWS, to the 2d Weather Group on 1 July 1960.

Personnel

During this reporting period there were five changes of key personnel with the Group headquarters and four changes in Group detachment commanders.[1] Authorized personnel totaled 1273 on 1 July 1960 and 1272 on 31 December 1960. Assigned personnel totaled 1160 on 1 July 1960 and 1131 on 31 December 1960.[2]

Manning in General

The unit manning was most favorable during the first half of the reporting period. The existent shortage was primarily in the weather observer career field. This shortage resulted from only 51% of the projected observer vacancies being filled on the 1QFY61 shortage report.

Manning in Field Maintenance Shop

The 4th Weather Group Field Maintenance Shops had a large influx of school graduate technicians during this period, bringing manning up to 100% strength. These men received intensive OJT to raise their skill level to the three and five levels, thus imposing a heavy training load on available skilled men. In spite of these problems, all required maintenance and equipment

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1. For a listing of Key Personnel and Changes, see Atch 1.
2. For a break down of these figures, see Atch 2.

installations proceeded on schedule. Those stations which in the past were completely without technicians received at least one school graduate, and the overall manning picture was thus improved.

New Quality Control Actions Section Established

During the month of August 1960 a division devoted to the management of Quality Control Actions was established within the Group Personnel Office. This section handled all actions related to Officer Effectiveness Reports, Airman Performance Reports, On-Job-Training, Classification, Proficiency Pay, and Control Roster Actions.

On 1 July 1960 there were seven airmen on the 4th Weather Group Control Roster. From 1 July 1960 to 31 December 1960 there were 24 personnel added to the roster and 9 airmen removed. Under the Group Quality Control Program one airman was discharged under the provisions of AFR 39-16 while the remainder were rehabilitated.

Flight Status Selection Board's Recommendations

During September of 1960 the Group's Flight Status Selection Board convened and forwarded flying status recommendations on nine personnel to AWS. Two officers were removed from flying status by Headquarters USAF under the Central Evaluation Program.

Reenlistments

There were eight airmen reenlisted under the Selective Reenlistment Program covering the period 1 July 1960 through 31 December 1960.

Williams Award Recommendation

Det 6, 4th Weather Group, Hanscom Field, Massachusetts was recommended by this Group for the 1960 Williams Award. Management of the detachment was outstanding. The strong leadership had produced a highly organized and effective team which was dedicated to the accomplishment of its mission.

AWS Inspection of 4th Weather Group

During September and October AWS conducted a general inspection of Detachments 4, 5, 10, 11, 12, and 15 and the Headquarters of 4th Weather Group. The AWS summary sent to Hq ARDC stated the following:

"All Air Research and Development Command requirements receive top priority. The emphasis and professional approach directed toward environmental and test center support functions is particularly commendable. In addition, considerable effort is being placed on tailoring severe weather forecasts for test center and down range activities."

CHAPTER II

MANAGEMENT IMPROVEMENT PROGRAMS

Surface Observing Program

This Group continued to place special emphasis on the observing program. A new 4th Weather Group[1] regulation established new procedures for monitoring the accuracy of surface observations. The Group Records Checkers were responsible for checking five days of records each month for each detachment. Only those items not included by Data Control were checked by Group Checkers. Error rates for each detachment were based upon the number of in-station errors plus the errors noted by both this Group and Data Control.

High Performance in Group Observing

The Group performance index improved from 1.60 errors per hundred observations for the previous six months to 1.22 errors per hundred observations. This achievement occurred in the face of a turnover of approximately 35% in experienced personnel. Three detachments received a quarterly Certificate of Merit for having achieved an outstanding performance index of 0.5 or less, during the period 1 July through 30 September. The weaker stations, none of which averaged over 2.4 errors per hundred observations, continued to receive the attention of this headquarters to resolve their difficulties.

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[1] 4WG Regulation 55-1, 29 Sep 60, See Atch 3.

Terminal Forecast Verification Program

The discontinuance of the Air Weather Service-wide forecast verification system by the 6 September 1960 recision of AWS Reg 55-35, precipitated changes in the 4th Weather Group verification program. After a thorough study this Group decided to continue the basic features of the AWS system for several reasons: The copious data gathered by the AWS program provided a standard for comparing stations experiencing weather of equal variability; the AWS system was simple, it had been operating effectively for several years; it was applicable to the flight operations at all bases supported by the 4th Weather Group; and it was amenable to diagnostic analysis.

Group's Addition to Verification Program

The 4th Weather Group added two features to the AWS program. The first feature classified all unsuccessful forecasts as being optimistic or pessimistic and the second indicated by a number code why the forecast was incorrect. This provided two tools for remedial activity and focused attention on the degree of cautious pessimism prevalent in most detachments.

As a second phase of the new verification program the 4th Weather Group intended to specifically "tailor" additional verification systems to the operations of each particular detachment.

Increased emphasis on forecast verification produced additional statistics revealing which categories of weather and which time periods were most troublesome.

Records for 1959-1960 showed that during each season twelve stations were more successful than the average AWS station with comparable weather variability, and two stations were doing less well. The latter were only slightly below the AWS average whereas most of the former were well above the standard.

A Shortcoming of Group's Verification System

One of the shortcomings of the Group's verification system as a management tool was that it provided an inadequate measure of comparative skill among different detachments. However, certain detachments were so significantly better than others, that the Group was able to commend them and to obtain useful techniques from them for Group-wide application.

Verification System Brings Out Problem Areas

Because Det 2, Andrews AFB and Det 3, Bolling AFB were only a few miles apart, their forecasts were coordinated during this historical period. Yet the verification scores were below standard for Det 2 and excellent for Det 3. An investigation conducted by this Group 4-6 September 1960 revealed that part of this discrepancy was due to differences in air base flying minimums, observed weather, and forecast periods.

Two consultant visits to Det 2 were made to combat such shortcomings as the pessimism shown in forecasts during "V-C weather" (unrestricted visibility and no cloud ceiling) and while summer thunderstorm activity was in the area. Two other areas under attack were: reduction in the forecaster experience level; and hurrying due to pressure of work.

Special Verification Program for Vernalis

In line with the second phase of the verification program, ("tailoring" of a verification scheme to the operation of each individual unit), the 4th Weather Group initiated a "tailored" system for Det 8, Vernalis, California, which supported USAF Cambridge Research Laboratories' balloon operations. This verification system used the distance between forecast and observed positions of a floating balloon as the measure of success of a trajectory forecast.

In order to assess trajectory forecast skill, Det 8 began to accumulate observed and predicted balloon position data in August. This was a slow process. The FCC-tracked balloons frequently went over the Pacific out of tracking range.

The purpose of collecting these verification data was to use them as a diagnostic tool for determining areas of weakness in forecasting, formulating plans for improvements, testing of new techniques, and determining trajectory forecast capability.

Technical Leadership

This Group determined that one factor which had contributed to a loss of effective weather service was the lack of effective technical management on the part of supervisors. Part of this weakness in management was caused by the uncoordinated working relationship between the various functions--administrative and technical. To encourage stronger supervision in the 4th Weather Group detachments' technical performance, the Group Commander stated his stand on this subject in "Commander's Comments" in the October Staff Digest.[2]

Employment of Resources

This Group has recognized that many technical efforts have fallen by the wayside because, in some instances, the project officer was transferred and had left inadequate instructions, in other cases responsibility was not clearly defined, and in still others the time available was intermittent and previous directions had been forgotten or lost. Based upon these factors, the Group continued its study on a formal method of establishing programs, projects, and tasks directed toward better technical work-organization and use of available resources. The outcome of this effort has been the new program called "OUR Program" (Optimum Use of Resources).

A basic aid to the achievement of "OUR" program objectives was a form[3] similar to the Department of Defense Form 613 on which program objectives, history, plan of action, and achievements were indicated. Testing of the form continued with all major technical programs being recorded thereon. This form was an aid in a program directed toward better technical management. It designated significant problem areas, outlined steps to be taken to solve them, assigned responsibilities, and recorded significant achievements.

Through the use of this record, detachments were able to effect continuity on projects which could be worked on intermittently when interruptions were caused by personnel changes and higher priority work.

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[2] "Commander's Comments," 4WG Staff Digest, Oct 60. See Atch 4.
[3] 4WG Form 0-30 (Test), Dec 60. See Atch 5.

Product Improvement

To stimulate the imaginations of forecasters into improving their weather forecasts, the Group officially recognized the value of the subjective "rules of thumb." These are rules acquired through the experience of forecasters at a particular location which are all too frequently lost when the forecaster changes station. Yet this Group realized that these same rules can form a basis for more sophisticated objective forecasts.

During the month of June, the 4th Weather Group introduced the latest increment in its technical product improvement program: ROTATE (Rules of Thumb And Their Employment).[4] This program provided for origination, recording and testing forecasting rules which then would become a part of the detachment forecasting procedures. Detachments have shown marked enthusiasm for the increment, which promises much in the forecast improvement effort.

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[4] The ROTATE Program was introduced in the previous 4WG History. (See History of 4th Weather Group 1 Jan 60 to 30 Jun 60, p. 6 and Atch 6).

CHAPTER III

4TH WEATHER GROUP INTERNAL PROGRAMS

Upper Air Observations

The average radiosonde height during this period was 99,800 feet. This compared very favorably with the average height of 96,600 feet for the previous six months.

Computer Used At Holloman

In addition to the Atlantic Missile Range Stations, Detachment 24 at Holloman AFB, New Mexico, also adopted the use of a computer for data reduction of upper air observations,

Technical Information Services

The Technical Information Services Program which was organized during the preceding period sought to:

1. Be more than a technical publication ordering service, but was oriented to technical problem solving and assistance to the field on special problems.

2. Develop a source bibliography for media having limited application or "one-time" use,

3. Provide an easily maintained cataloging, search and recovery system.

4. Recognize, evaluate, and conduct literature search in preparation of either bibliographies or technical reports on problems at group and detachment level.

The first step toward realization of the above objectives was to determine if present workload and manning were sufficient to handle the increased workload which the objectives would generate.

A manning study was made concurrently with a study of the Administration Branch of 4NGTS. The conclusion reached was that the Administration Branch's workload alone was absorbing all available manpower and that the objectives set for both sections could not be reached without an increase in personnel which would allow the two sections to function semi-independently.

One of the steps in meeting these objectives was to convert the unclassified and classified libraries to the universal decimal classification system (U.D.C.). This universal system, used in the majority of technical libraries, permitted quick search and recovery of publications. This conversion was started October 1958 with an original completion date of October 1959. However, lack of manpower had delayed the completion of this project resulting in a revised target date of October 1961.

Publications management posed other problems. Since field units prepare technical publications, the program called for:

1. Assuring that the limited technical manpower available at all levels could be better directed toward solving major problems and not be wasted on minor ones or investigations in technical areas where satisfactory solutions already existed.

2. Assuring publications issued by subordinate units met professional and USAF standards. Although a regulation had been published explaining procedures, these were not understood by detachments which continued to send copies of their publications for review after local reproduction had already been accomplished. Therefore, the Group established a more positive control system

which required that all technical reports originating within 4th Weather Group be published as numbered technical pamphlets.

Since detachment personnel have professional interests in special technical problems, the Group established a special subject file by detachment. Then, whenever a new material appeared in literature, it was extracted for field benefit. As a space age topic, for example, the Group prepared a series of articles on such timely subjects as meteorological satellites and atmospheric influences on electromagnetic propagation.

Weather Vision at Det 2

The new Motorola Weathervision, leased from Radio Communications Service, Inc., became operational at our Det 2, Andrews AFB at the end of this period. The new system incorporated the following desirable features:

a. The ability to record the audio portion,
b. Four lenses, including telephoto and wide angle,
c. A camera attachment for the CPS-9 scope, and
d. A space conserving console.

Initially there were four receivers placed with the following agencies: 95th FIS Hot Room, 95th FIS Alert Room, AF Reserve Unit, and ARDC Hangar. Leasing this system was expected to represent a savings of approximately $22,000 annually plus a savings of approximately $7000 on the installation of the Motorola equipment rather than modifying the Bage System.

New Facsimile Schedule

The 4th Weather Group had made good use of the new National

Weather Facsimile Schedule. In particular, the surface analyses transmitted eight times daily coupled with the LASC enables Group forecasters to remain "on top" of weather conditions which were likely to affect operations. With the addition of the weather depiction chart, the radar summary chart and the upper air series, the duty forecaster was better equipped to provide three dimensional weather service to both aircraft and missile operations than had ever been possible before.

The 120 scan facsimile system helped to improve the overall chart quality and provided better charts for pilot self briefing displays. The pilot self briefing system, being dependent on more up-to-the-minute weather data, benefited greatly from the more frequent surface and weather depiction charts.

Radar Meteorology

The application of radar methods to forecasting had not kept pace with the progress in weather radar development. There were several fields offering opportunity for improvement.

Generally the intensity of an echo on a weather radar scope is a function of the intensity of the storm generating the echo. By applying some basic research done by the Severe Storm Section of Geophysics Research Directorate, Cambridge Research Laboratories, Major Abraham L. Ruis and 2nd Lt David M. Taylor of Det 6, 4th Weather Group, L. G. Hanscom Field, Bedford, Massachusetts, developed a graph which related radar gain settings to storm intensities. Preliminary application of this technique in central New England showed that this device was effective in detecting and ultimately forecasting severe storms. As one example, the radar observation at 1700EDST on 21 June 1960 indicated a category 6 storm (severe according to the graph) near Utica, New York. A devastating tornado occurred at 1930 EDST at Schenectady, New York from this same storm.

Emphasis on Use of RAREPs in Detachments

The extension of USWB radar network over the US east of the Rocky Mountains along with their centralized control and analysis center at Kansas City, Missouri placed another valuable source of information at the disposal of the practicing forecaster. Professional analyses of this radar data were transmitted every three hours starting 15 Dec 1960. The Group distributed a letter[1] to its detachment forecasters to increase their knowledge of RAREPs and to prepare them for using the new product.

Radar "Angels"

Radar "angels" constitute one field in which ignorance is limiting application of radar information. Certain theories regarding these "angels" require substantiation, further development, or disproof based upon empirical evidence gathered in the field.

Two excellent examples were given to the Meteorological Radar Branch of GRD for their study and evaluation. One was a well documented case of the Det 16, Maxwell AFB, Alabama, CPS-9 radar picking up an echo caused by, or at least accompanying, a surface wind gust. In the words of Dr. David Atlas, an acknowledged leader in radar meteorology, "There is insufficient evidence of this association (between a type of radar echo and a surface wind gust) in the literature."[2] Dissemination of this information among 4th Weather Group and possibly in the Bulletin of the American Meteorological Society was planned.

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[1] Ltr, Dir of Ops & Tng, 4WG to All dets, O/L's and SWS, Subj: RAREP Analyses, 25 Nov 60. See Atch 6.

A second example of an echo was noticed at Det 5, Tinker AFB, Oklahoma. Scope pictures showed a pronounced line echo which accompanied a cold front which was devoid of clouds and precipitation.

Once echoes such as these have been properly evaluated and CPS-9 operators have been informed of their existence, it will be possible to accurately forecast the onset of hazardous winds, some of which can not be forecast by any other technique.

New FPS-68 Weather Radar to Replace APQ-13

AMS recently programmed for the FPS-68, a local-use, lightweight weather radar which has a range of 200 nautical miles. The main purpose for its development was to replace the obsolescent APQ-13. The new FPS-68 contained the advantages over the APQ-13 of having a greater range and an RHI scope for vertical presentation of clouds. Compared with the CPS-9 the cost of this new unit was relatively low.

Site surveys were made during this period for the new FPS-68 to be installed at the following 4th Weather Group detachments: Det 14, McClellan AFB, California; Det 17, Hill AFB, Utah; Det 15, Griffiss AFB, New York; Det 12, Olmstead AFB, Pennsylvania; and Det 23, Kirtland AFB, New Mexico.

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[2] "Review of Report on Angel Echoes," 18 Nov 60, CRZPA/Dr. Atlas to CROW, AFCCDD.

CHAPTER IV

AWS SUPPORT PROGRAMS

Transfer of MFSCs[1] to FAA[2]

During August 1960 plans were completed for a transfer of all Military Flight Service Center clearance functions to the Federal Aviation Agency. 4th Weather Group detachments being affected by this change were Wright-Patterson AFB, Ohio; Olmsted AFB, Pennsylvania; Maxwell AFB, Alabama; and Lowry AFB, Colorado.

Target dates for this transfer were 15 December 1960 for Wright-Patterson AFB and Lowry AFB; and 1 January 1961 for Olmsted and Maxwell AFB. AWS was to retain responsibility for providing MFSC-type weather briefings. All weather personnel were to be relocated from the Flight Service Centers concerned within ninety days following transfer of the function, and new briefing positions with complete communications were to be established at another location on the same base. After a 90-day trial period under this arrangement, AWS was to determine whether it would become permanent or whether other arrangements would be made for handling MFSC-type briefings.

Changes in Number of Terminals for TFF[3]

At the close of this period the TFF was preparing terminal forecasts for 28 facilities. All but two of the forecasts were in the abbreviated clear text format. These two exceptions were

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1. Military Flight Service Center
2. Federal Aviation Agency
3. Terminal Forecast Facility at Kansas City Forecast Center.

the recently resumed forecasts for Amarillo and Sheppard AFB's. Because both of these bases had SAC units, TFF prepared these two forecasts in the TAFOR Code for ease of relaying to overseas bases. Future plans call for the TFF to prepare a forecast for Minot AFB in the TAFOR form beginning 1 January 1961.

Rearrangement of FTUS KIK2 Bulletin

At the request of several 4th Weather Group stations and 8th Weather Group, the TFF forecast bulletin was rearranged so that the order of stations was compatible with their order on the SAUS bulletins. This enabled separation of the forecasts in reasonable sized strips for posting on clip boards adjacent to the pertinent SAUS collective. Because less time was necessary to search for a particular TFF forecast, this change was of immediate benefit to forecasters. The rearrangement was also more suitable for adaptation to pilot-self-briefing.

Stabilization of Forecasters at TFF

Efforts were made at Det 4 to stabilize forecasters whose forecasting skill indicated an above average success at this type of work. AWS agreed that special consideration should be given to the manning of the detachment and that an objective of a four-year tour at Kansas City was reasonable and could be upheld. Consideration to a longer or shorter tour could be considered if a seven-months lead time was given. This included recommendations for curtailment of assignment at the three-year or recommending extension to a five-year period at the recommendation of the Detachment Commander.

Postponement of SWWF[4] and SELS[5] Consolidation

In late October word was received that the proposed consolidation of SWWF and SELS on 1 January 1961 would not occur since USWB funds were not available for the consolidation. Since this word was received at a time of relative severe weather inactivity and also during scheduled departure of trained personnel, training of new personnel into this function became a serious problem.

Atlantic Sferics Network Changes

During this period arrangements were completed to relocate the Sferics Slave Station from MacDill AFB, Florida to Patrick AFB, Florida. AWS established a target date for this move as 1 March 1962. Transfer of the four authorized UWB positions for sferics operation at MacDill to Patrick was requested during November by AWS.

Sferics Equipment

Primary and spare AN/GRD-1B sferics equipment was received at Andrews AFB during this reporting period. One of the units was to be used as an operational check.

The new equipment was found to be very sensitive to local electrical interference. This had resulted in unsatisfactory reception which had not been corrected at the end of this period. Operation of the older AN/GRD-1A sferics equipment was being continued pending solution of operational problems with the new equipment.

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[4] Severe Weather Warning Facility of AWS located at Kansas City, Mo.
[5] Severe Local Storms Unit of USWB, Kansas City, Mo.

AN/GRD-1B sferics equipment intended for Kindley AFB and MacDill AFB had been shipped from ROAMA. Target date for receipt of this new equipment at Kindley was December 1960. The sets had just arrived at the end of this reporting period but had not been installed.

Tornado Sferics Network

Plans for Tornado Sferics Network operation for the coming season were completed during this period. These plans called for slave stations at Sioux City Air Base, Iowa; Chanute AFB, Illinois; Greenville AFB, Mississippi; Sewart AFB, Tennessee; Tinker AFB, Oklahoma; and Goodland, Kansas. The master station was planned to remain at SWWC, Kansas City.

A modified telephone communications arrangement for the Tornado Sferics Network was planned for the coming season. Switching arrangements were requested which would permit connection of any two or more stations with each other and with Kansas City. Under this arrangement when two stations were connected, Kansas City could also transmit or receive data from any other station in the network not involved at the time. This arrangement was expected to have a definite speedup in exchange of information between all units in the sferics network.

Tornado Alley

6th Weather Squadron terminated the deployment of six rawinsonde and six sferics teams during September. These teams provided supplemental observations for the severe weather warning center's study and prediction of areas where tornados would occur.

Tornado Alley Plans for 1961

Project Officers spent many hours during October, November and December planning for and coordinating 1961 activities. 4th Weather Group submitted the plan for upper air and sferics observations to AWS during October. This plan provided for six mobile rawinsonde and six sferics teams to be located at strategic locations determined by the Severe Weather Warning Center at Kansas City, Missouri. Funding restrictions created problems in determining the number of rawinsonde stations that could be fielded. In addition, the withdrawal of a sferics set for further testing caused the reduction of one sferics team. A final position concerning implementation of a plan calling for six rawinsonde and five sferics teams. These teams were planned to be located as follows:

RAWINSONDE (15 Feb 1961 - 20 May 1961)

Reese AFB, Texas

Dyess AFB, Texas

Altus AFB, Oklahoma

Ft Smith, Arkansas

Ellington AFB, Arkansas

Blytheville AFB, Arkansas

RAWINSONDE (21 May 1961 - 30 Sep 1961)
Huron, South Dakota
Cedar Rapids, Iowa
Grand Forks AFB, N. D.
Goodland, Kansas
Scottsbluff, Neb.
South Bend, Ind.

SFERICS (15 Feb 61 to 30 Sep 61)
Greenville AFB, Miss.
Lowry AFB, Colo.
Chanute AFB, Ill.
Dyess AFB, Texas
Sioux City, Iowa

On 2 Dec 1960 the Working Committee of the National Coordinating Committee for Aviation Meteorology published the upper air annex as jointly agreed upon. This annex included the 4th Weather Group plan as revised because of the factors cited above.

Pilot Self-Briefing Displays Begun

Based upon the final report on Pilot Self-Briefing sent from 4th Weather Group to AWS in May 1960, AWS sent out a package distribution of PSB to all detachments presenting displays for weather planning and local observations. Detachments were directed to use the displays as a guide in preparation of their local display.

Suitland Weather Editing Section

Two additional teletype circuits were installed at the Suitland Weather Editing Section during this period. These were circuit 21 X 11/12, send and receive, connecting NMAF and High Wycombe, England, and circuit 111, receive only, from Tinker AFB, Oklahoma. Installation of these circuits greatly increased both the amount of overseas data being processed at Suitland and the output to foreign receivers.

On 9 Nov 60, the operating speed of all Federal Aviation Agency Service C circuits was increased to 100 words per minute. This further improved the data handling capability at NMAF by some 30%.

The Suitland Weather Editing Section provided continuous support to the Numerical Weather Prediction Computer Unit at Offutt AFB, Nebraska, during this period. Through use of conditioning codes which were added to specific bulletins to assure that the computers would automatically accept this data into its system, NMAF again demonstrated its ability to maintain pace with the worldwide weather communications system. The Weather Editing Section initiated a test of this procedure during September with all of the subsidiary relay centers participating. Except for a few minor changes in the operation, the program was generally very successful.

CHAPTER V

ARDC SUPPORT PROGRAMS

Staff Meteorologists

Experience within 4th Weather Group has continually shown that effective meteorological support requires a close functional relationship between the staff meteorologist and the commander's staff. This Group has believed that where individual R&D systems management was conducted--especially within ARDC Divisions--the impact of correct decisions from the natural environment standpoint has been far-reaching. During this period the Group continued to encourage its Staff Meteorologists to obtain positions within their supported organizations where they could play more active roles in their contribution to the planning decisions.

In the ARDC divisions--AFCCDD, AFBMD, and WADD--the Staff Meteorologists completed functional realignment and demonstrated division recognition that their functions were those primarily of special staff offices rather than primarily liaison offices. Their actions resulted in publication by BMD[1] and CCDD[2] of regulations which stated their responsibilities and in a change in organizational status at WADD from liaison to division. Within Hq ARDC a similar action was effected--that of being included in the ARDC Organizational and Functional Chart Book of the Staff Meteorologist's functions.

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[1] AFBMDR 80-6, 20 Jun 1960

[2] Ltr, CCDD DCS Plans and Operations, Subj: "Staff Meteorological Services," dtd 6 Jun 60. See Atch 7.

In addition to the formal actions stated in the previous paragraph, 4th Weather Group prepared an article on Meteorological Efforts which was issued in the ARDC "News Review."[3] Typical of field activities was that done by the WADD Staff Meteorologist who publicised his functions in the WADD official newssheet,[4] "Management Highlights."

Increased Responsibilities of ARDC Staff Meteorologists

During early December 1960 this Group recommended to AWS that the grade of Lt Col be authorised for the Staff Meteorologist at each 4th Weather Group Operating Location supporting a major element of Air Research and Development Command.[5] The recommendations were made because of increasingly higher responsibilities with which the Staff Meteorologists were facing and the increasing influence these officers wielded in the development of multi-million dollar weapon and other staggeringly expensive systems of the future U. S. Air Force.

Geoastrophysical Effects Program

On 1 September 1960, the Group published the most comprehensive and meaningful document yet constructed pertaining to aerospace environmental effects. This classified document, the 4th Weather Group Manual 105-1, contained informational guidance for those concerned with determining related future operational support requirements and also for those concerned with related research requirements. This manual superceded and replaced the pilot study, "Geophysical Support Requirements for Future Weapon Systems," which was published by 4th Weather Group in April 1960.

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[3] "Staff Meteorologists' Experiments Supply Data for Aerospace Analysis," ARDC News Review, Dec 1960. See Atch 8.

[4] WADD "Management Highlights," dtd 27 Oct 1960. See Atch 9.

[5] The O/L's involved: Air Force Ballistic Missile Division, Wright Air Development Division, Air Force Command and Control Development Division, and the 6594th Test Wing(Satellite) (ARDC)

The information contained in the classified 4th Weather Group document was largely a product of the ARDC Division Staff Meteorologists and the many System Project Offices (SPO). The material pertaining to individual systems was coordinated with the SPO's.

After publishing the document, 4WGTS[6] took initial action to have the next edition issued as an ARDC publication. At this writing, this action was in an advanced state.[7] Numerous problems remained. The Group felt that the various decisions for which the effort was directed must be better defined. This would permit amendments in content and procedures. Survey action was initiated to determine how the information would be used and what changes should be made to permit better decision making.

The identification, evaluation, and reporting of effects was largely through personal efforts of staff meteorologists. In order that more official recognition might result, the Hq ARDC Staff Meteorologist had requested the amplification of ARDC's procedural guidance manual so that its Divisions would analyze future support problems.[8] Success was achieved when Hq ARDC "Consolidated Program Guidance Supplement No. 1" was issued on 15 Nov 60. This document stated that Systems Development-Test-Production Plans must emphasize "Identification of any special considerations due to natural environmental parameters which may influence the system such as wind, fog, precipitation, ionospheric effects, magnetism, etc."

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[6] 4th Weather Group Technical Services Directorate.

[7] Ltr, Comdr 4WG to Dets 10, 11, 15, 21, 23, 24, and SMs, Subj: Environmental Effects Program, 6 Jul 60. See Atch 8, 4WG History 1 Jan 60 to 30 Jun 60.

Hysometer Radiosondes Used to Support ARDC

All ARDC support rawinsonde stations started using AN/AMT-12 hysometer radiosondes. These sets provided much greater accuracy in pressure, temperature and height computations, and were highly desired for all runs where accuracy was vital.

Rocketsondes Used for High Level Data

During the past six months emphasis was placed on the need for high level environmental data through rocket soundings. Within the period 8 August through 31 December 1960, fifty-nine LOKI II rockets were fired from Patrick AFB, Florida. Of this number, 27 were successful in that chaff was acquired by radar above 150,000 feet. LOKI IIs were also fired at the White Sands Missile Range. Several failures had occurred in these firings also.

Throughout this period chaff of the same diameter was utilized. Although the diameter of chaff was adequate for acquisition early in the period, strengthening winds aloft in November and

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[8] See "Group Reviews ARDC Management Procedures," History of 4WG 1 Jan 60 to 30 Jun 60, p. 7.

December contributed to rapid dispersion of chaff and more frequent acquisition failures in recent firings. This factor as well as failures due to unknown causes was expected to precipitate a restudy of the LOKI II procurement area.

Mobile Rocketsonde Plans for 6th Weather Squadron

During November this Group completed a preliminary plan to incorporate a mobile rocketsonde capability within the resources of 6th Weather Squadron. The plan specified four rocketsonde teams equipped with launchers, rockets and sensors to acquire data in altitude regions 100,000 to 250,000 feet to support research or operational projects at locations not having such a capability.

Missile and Satellite Support

SAMOS: During July and August 4th Weather Group staff agencies coordinated extensively with other AWS Wings and Groups to align weather support for SAMOS System Tests. As a result of this coordination, 4th Weather Group Operations Plan 755-60 was developed and published during September. This plan was implemented by 4th Weather Group O/L 6594th Test Wing at Sunnyvale, California in November to support the first test. It was implemented again in December during a Command Post Exercise which was specifically set up to test certain phases of weather support.

MIDAS: 4th Weather Group Operations personnel, Staff Meteorologists of the 6594th Test Wing, and Staff Meteorologists of AFBMD coordinated with other AWS Wings and Groups to align weather support for future MIDAS System Tests.

DISCOVERER: 4th Weather Group planned, provided and arranged for launch, orbital and recovery weather support for all scheduled DISCOVERER tests. The Commander, 6594th Test Wing commended weather support units for their effective participation in four significant instances of capsule recovery.

Support to AMR

With the extension of the AMR to the area south and east of South Africa, the 4th Weather Group, for preliminary planning purposes, began a survey of available weather support in that area. Following survey trips by Captains Dunn and Pratt through the South Africa range areas and further investigation by Detachment 11, 4th Weather Group at Patrick AFB, the following significant developments were disclosed:

1. In general, the weather service for flights across South Africa and between various air terminals was acceptable on a minimum basis.

2. The AMR has indicated a possible need for weather reconnaissance in the missile impact areas to the west, southeast and east of South Africa.

Long Range Hurricane Forecasts Needed for AMR

Hurricanes affecting the Atlantic Missile Range and the Eglin Proving Ground Command Range during the autumn of 1960 pointed up a need for additional oceanographic support from agencies with the technical ability to provide more accurate detailed forecasts. Damage to various Atlantic Missile Range sites on both ranges brought out the following problems:

1. A critical need for long range forecasts to enable personnel and equipment to be evacuated from the sites most vulnerable to the path of the storm. These forecasts would need to provide at least sixteen hours advance notice for the Eglin APGC Range.

2. Oceanographic support to improve or develop better forecasting of storm tide, tidal surges, high water and high wave action for specific range sites rather than generalized large area forecasts.

Through the coordination of the U. S. Navy Hydrographic Office, the Fleet Weather Central and the USWB (Storm Surge Unit Office of Meteorological Research; Emergency Warning Service; and the Weather Bureau Library), the 4th Weather Group was able to gain a knowledge of the work that was going on in the field of oceanographic research. After an exchange of views and ideas between the 4th Weather Group representative and those of the other agencies this headquarters was looking forward to an improved service of forecasting and weather warning to its supported range agencies in the future. This Group made recommendations to AWS to be included in the 1961 Hurricane Conference to be held in Miami in February.

In addition, the USWB Storm Surge Unit and the 4th Weather Group were conducting seminars together in order to resolve problems in this area.

Group Participation in IRIG[9]

Representatives of this Group continued active participation in the IRIG,[10] Meteorological Working Group (MWG). Members from Detachments 11 and 24 as well as associate members from ARDC (RDW) and BMD (WDLM) attended the IRIG Symposium at Fort Bliss, El Paso, Texas on 31 Oct - 4 Nov.

The following are examples of how personnel of this Group have made constructive contributions to IRIG: The MWG Committee on Range User Requirements is chaired by the Detachment 10 members; during the preparation of a report on range user requirements, a 4WGIS officer served as secretary of the committee; and the MWG member from Det 10 was chosen as MWG chairman for the coming year.

Support to USAF Free Balloon Activities

During August a study was submitted to AWS which concluded that it would be more economical to terminate Project Stratus rawinsonde operations at Castle and activate a Rawinsonde Cell at Vernalis, California to support Project Stratus as well as USAF Free Balloon Activities. AWS, AFRD, and the 3rd Weather Wing concurred in 4th Weather Group's proposal. In December programming action was initiated to assure adequate authorizations at Vernalis.

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[9] Inter-Range Instrument Group

[10] An insight into the accomplishment of IRIG can be obtained from its minutes, for instance, "Minutes of the 23rd Meeting, IRIG Steering Committee," 19-20 July 1960.

Approach Visibility Project

The Approach Visibility Project at Wright-Patterson AFB under the supervision of the USWB has met with little success even though the components of the RVR-ALCH test system have been in readiness (except for minor difficulties in equipment) since March 1960. Generally, three to four observers and one equipment technician from Det 1, 4th Weather Group have been assigned to the project. However, no successful operational tests were conducted during periods of bad weather since the instrumentation was located at the northeast end of the runway and landings were from the southwest. Funding for the project expires on 3 Feb 61 and it was unknown at the time of this report whether the project would be continued.

CHAPTER VI

AF SUPPORT

Liaison Established for USAF Command and Control System

During November liaison was established with Command Post, Hq USAF to assist them in identifying weather requirements for the USAF Command and Control System (473L). This liaison was planned to be maintained to assure updating these requirements when and if the concept of operations should change. Additionally, a statement of these requirements was furnished the Commander AWS to ensure that they would be included in the Specific Operational Requirement (SOR) 473L.

Television Used to Brief Hq USAF from Det 28

During July, Det 28 forecasters used television for the first time to present daily weather briefings to AFCIN. Coordination between USAF and USN staff agencies resulted in the Navy allowing Det 28 forecasters to use the U. S. Naval microwave TV circuit from FOB #4, Suitland, Maryland to the Pentagon.

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1. U. S. Air Force Chief of Intelligence

CHAPTER VII

MISCELLANEOUS SUPPORT PROGRAMS

SAC Support

As of 10 August 1960, SAC Dispersal Units were located at the following 4th Weather Group detachments: Det 1, Wright-Patterson AFB, Ohio; Det 10, Eglin AFB, Florida; Det 13, Robins AFB, Georgia; and Det 15, Griffiss AFB, New York. Detachments 13 and 15 were involved in the TOP RUNG low-level navigational exercises for B-47 and B-52 aircraft during June and July.

During September Detachments 10 and 13 maintained continuous weather surveillance through the use of their CPS-9 radar for the SAC Combat Competition exercise. The period of their responsibility covered the 14th and 15th of the month.

This Group established a SAC support publications file for the purpose of monitoring the SAC support at its detachments for possible increase in their effectiveness. At the same time the Group gave each SAC support detachment a list of current and required publications so that they could bring their files up-to-date.

Detachments supporting SAC were adjusting to the program satisfactorily. A Staff Visit Report by 3rd Weather Wing to Det 1 and 4th Weather Group Staff Visits to Detachments 10 and 13 all gave a favorable evaluation of this support.

Presidential Flights

During October 4th Weather Group published its last operations order to support a flight taken by President Eisenhower. This flight included visits to Midwestern, West Coast, and Gulf Coastal areas. Publishing this order required extensive pre-planning and coordination since stops were made at locations served by the U. S. Weather Bureau, the U. S. Navy, and the United States Air Force.

Det 28, 4th Weather Group placed forecasters on duty at Air Force Command Post to monitor weather support to each segment of the flight. Comments from Colonel Draper's (Presidential Pilot) crew indicated that effective weather services were provided in every instance.

Transfer of Meteorological Support of White Sands Missile Range

Early in July 60, the Commanding General, White Sands Missile Range, formally requested that meteorological support for WSMR be transferred from Air Weather Service, USAF, to the Signal Missile Support Agency, U. S. Army.[1] The Dept of the Army made a decision in Nov 60 to assume these responsibilities. The Dept of the Air Force established a date of 1 Aug 61 for the completion of the transfer.[2]

Total personnel involved in the WSMR support phase-out were

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1. Ltr, WSMR (ORDBS-G3) 5 Jul 60, Subj: Meteorological Support to WSMR. See Atch 10.
2. Ltr, DAF (AFOMX) 25 Nov 60, Subj: Program for U. S. Army Meteorological Support. See Atch 11.

70 airmen and 4 officers. Through substitutions of WBMR personnel during 2QFY61 for overseas transfers, and the stopping of requisitions of personnel shortages in 1QFY61 (for 3QFY61 reporting dates), the projections of WBMR personnel still "on board" at end of 3QFY61 were 2 officers and 28 airmen. These actions were expected to reduce to a minimum the cost of transferring surplus WBMR personnel upon final phase-out of AMS support. This pattern of maximum reduction through attrition was planned to be followed during the time remaining until 1 Aug 61, the final date for the completion of phase-out.

Support to the Alternate Joint Communications Center

Because of constantly changing concepts relative to the Alternate Joint Communications Center, 4th Weather Group staff actions to establish firm personnel and communications requirements could not be completed. However, extensive lateral coordination was continued to prepare recommended changes to AMS OPLAN 501-59 for submission to AMS. These changes were not finalized or incorporated within the plan because of these fluid conditions.

6TH WEATHER SQUADRON (MOBILE)
4TH WEATHER GROUP, AWS - MATS
UNITED STATES AIR FORCE
TINKER AIR FORCE BASE, OKLAHOMA

HISTORICAL REPORT (RCS: AU-D5)

Historical Informational Report of the 6th Weather Squadron (Mobile), 4th Weather Group, Air Weather Service, MATS, for the period 1 July 1960 to 31 December 1960. The 6th Weather Squadron (Mobile) is located at Tinker AFB, Oklahoma.

MISSION:

The mission of the 6th Weather Squadron (Mobile) remained the same during this reporting period which is to:

1. Provide temporary or semi-permanent weather observation services on a world-wide basis to special projects of the United States Air Force, the United States Army, and other government agencies and departments.
2. Maintain a mobile, air-transportable capability for surface and upper air observations to meet requirements and deployments as directed.
3. Furnish meteorological observations in support of the Severe Weather Warning Center.
4. Operate the Air Weather Service Rawinsonde Verification Unit to provide information on the quality and quantity of upper air data produced by Air Weather Service and units under contract to the United States Air Force.
5. Operate the Weather Editing Section of the USAF consolidated weather relay and monitor center.

ORGANIZATION:

The organization of the 6th Weather Squadron (Mobile) at the close of this period is in accordance with AWS GO 49, 7 November 1958, based on O/T R3415Q, 1 August 1958, and O/T R3417X, 1 August 1958. (See attached Squadron organizational charts - Attachments #1 and #2.)

PERSONNEL:

Key Personnel:

Lt Col Bernard Pusin	Commander
Lt Col David C. Barrow	Executive/Operations Officer
Major Harry P. Averill	Chief, RAVU
Major Glen H. Howarth	Maintenance Officer
Major Carl W. Herdic, Jr.	Asst Operations Officer
Captain Lee E. Main	Chief, Personnel & Administration
1st Lt Richard L. Hager	Asst Operations Officer
1st Lt Paul T. Norwood	Materiel Officer
2nd Lt Phillip W. Goertz	Asst Chief, RAVU
CWO W-4 William J. Stricker	Asst Operations Officer
MSgt James C. Michael	1st Sgt
TSgt L. C. White TSgt Henry F. Kliner, Jr. (30 Sep 60)	NCOIC, Motor Pool
TSgt Donald M. Banks TSgt Jack D. Wilson (1 Oct 60)	NCOIC, Weather Editing

	1 Jul - 31 Oct	1 Nov - 31 Dec
MSgt Dan M. Chadwick	Team 7	Flight A
MSgt Clifford T. Jones	Team 8	Flight B
MSgt Robert F. Kercheval	Team 9	Flight C
MSgt Dan Brantly	Team 10	
MSgt Samuel H. Stewart	Team 11	Flight E

	1 Jul - 31 Oct	1 Nov - 31 Dec
TSgt Ernest Fisher	Team 12	
SMSgt Hilmer D. Sherry	Team 13	
MSgt Oscar D. Sims	Team 14 (to 1 Sep 60) Team 15 (to 1 Oct 60)	
TSgt Mervyn L. Drake		Flight D
TSgt James L. Riordan		Flight F
TSgt Lowell A. McLain		Flight G
TSgt Oliver T. Leirmo		Flight H
TSgt Raymond L. Stolarski		Flight I(No dates avail)
TSgt Edward A. Testensen		Flight I(No dates avail)
TSgt Richard C. Fisk		Flight I(No dates avail)

TABULATION OF OVERALL MANNING:

As of 1 Jul 60			As of 31 Dec 60	
AUTH	ASG		AUTH	ASG
7	9	Officers	7	9
-	2	Warrant Officers	-	1
186	176	Airmen	192	182
1	1	Civilians	1	1
194	188		200	193

UNIT ADMINISTRATION: The administration section is organized under functional account 03000 and is comprised of three (3) separate, but related functions: Administration, Personnel Administration, and Accounting/Budgeting.

Administration: The administration section has continued to operate on a very satisfactory basis. This function is now 100% manned; however, an Airman First Class is filling a position in the administrative function that is authorized the grade of Technical Sergeant.

Publications Development: The system of Team Guides for use of our Teams at Operation Locations, which was begun during the last reporting period, has proved highly satisfactory. All of the guides were screened recently for up-to-date material and applicability. Team Chiefs have expressed their opinions that these new Team Guides are much better and easier to use than the old system. This system will continue in view of the success obtained as a result of the trial period. They have now been renamed "Flight Guides" to conform with the new terminology under the "Flight" concept.

Security: Unit Security has continued with an outstanding record. There have been no security violations during this reporting period.

Personnel: On the 7th of November, the personnel section was brought up to strength by the assignment of an A3C AFSC 73230 directly from Technical School. This 100% manning has greatly enhanced the performance of this section. On the 1st of December, however, we received our new UMD which dropped our authorization in the 03000 function from 15 to 7. Of these 7 there will be only two personnel AFSC's authorized which will put a strain on our personnel section. This revision in the UMD for the 03000 function causes grave concern for the future of this squadron. To our knowledge, this squadron is the only ground weather unit left in the Air Weather Service that is not under a CAPS (Centralized Administration and Personnel System) arrangement for its administration and personnel functions. We have long advocated that personnel and administration for a mobile squadron, such as this one, cannot be managed at a headquarters far removed from its area of operation. During the past year the pressure for CAPS has become increasingly severe, and it now appears that we will have to fight to keep from consolidating our personnel records at 4th Weather Group headquarters. Consolidation will seriously jeopardize the very mobility of this squadron, with its capability for deploying a highly specialized weather observing flight anywhere in the world within a matter of hours. If the records are consolidated, the distance factor alone is enough to hinder operations because of the necessary lag time involved between the signal to move out and the orders and money required to execute the move.

On 1 September 1960 Captain Lee E. Main, the Personnel and Administrative Officer, was sent to Maxwell Air Force Base, Alabama where he attended the Squadron Officers Course. During Captain Main's absence, Chief Warrant Officer William Stricker temporarily filled the position of Chief, Personnel and Administration.

Immunizations: On 15 September 1960 we received word of the requirement for all MATS personnel to be world-wide current on required immunizations. A program was designed to immunize our people as rapidly as possible. Through close coordination with the Tinker AFB Hospital, all personnel were immunized within five (5) weeks. The personnel are now world-wide current on required immunizations, which again increases our readiness to deploy world-wide on a moment's notice. A suspense system has been established to maintain this readiness.

Retirements: Calendar Year 1960 marked a milestone in 6th Weather Squadron history with the retifement of MSgt Charles M. Vester, TSgt Alfred P. Clark, Jr. and TSgt L. C. White. TSgt Clark was the first of the three to retire. This was the first retirement from this squadron. The administration of these three retirements was ably supervised by MSgt Donald M. Garnett, NCOIC, Unit Administration.

Safety: This squadron continued with a top-notch safety record as a result of a well-rounded safety program. Although one fatality was experienced because of an automobile accident, we had no other major automobile accidents, government vehicle accidents or personal injuries. The fatality we experienced was the death of SSgt Clifford F. Garrod on 19 July 1960, who died as a result of a one-car collision one-half (½) mile south of Sioux City, Iowa on 18 July 1960. SSgt Garrod was a member of a Tornado Alley Team operating in the Sioux City area during Phase II of Tornado Alley 1960.

A significant safety measure that has been incorporated into our safety program is that of individually briefing personnel who depart on leave or TDY where travel is to be performed. A certification to this effect is then made on the travel or leave order.

Budget and Accounting: During this reporting period we have maintained the B & A function of this squadron with a trainee type accountant. Through close management by the squadron and hard work by the accountant trainee, we judiciously spent 98.8% of our AFA for FY 1960 of $140,500.00, without any errors or over-obligation. This in itself was an outstanding accomplishment, however, the experience gained and the improvement in our relations with Tinker AFB were the significant things that typify "can-do". Among the important things, from a management standpoint, that came out of this past year's money management program were:

(1) A new system for instantaneous funding through the Tinker AFB B & A Office.

(2) A new integrated mechanized accounting system.

(3) A new system for paying per-diem to personnel in a deployed status.

(4) A method to order through normal supply channels up through 1 February of each calendar year, then stop-order and use direct funds citations until

the end of each fiscal year.

All these things have greatly increased the effectiveness of the accounting function. The key to the increased effectiveness has been teamwork, coordination, and control.

Administrative Management Procedures: During the past year, many new and worthwhile administrative management procedures were begun in this squadron. Five (5) of these procedures are important enough to mention here and their future use is highly recommended. They represent the thinking that is necessary to overcome the many obstacles confronting a mobile activity. They are listed here to establish a record, and a reference, for their future use.

In order to keep all personnel well informed and mission oriented, a series of meetings were established; starting with the Commander's weekly staff meeting. After the staff meeting, each staff participant briefs each member of his section. The Minutes of the Staff Meeting are then published for the information of all personnel and as a permanent record. In addition, Commander's Call is held at least once each month or oftener, if necessary. The requirement for holding Commander's Call when Flights are deployed is the responsibility of the Flight Chiefs. The personnel participate in Commander's C ll with the Base Weather personnel at the station where his flight is attached, or he holds Commander's Call himself, using information provided by the squadron. This procedure has proven very satisfactory and has been a significant factor in increasing morale and efficiency.

To facilitate the processing of flights for deployment or the turnaround of Mobile Weather Flights already deployed we began a system whereby an NCO was employed as coordinator. This arrangement worked so well that

Flight Chiefs remarked that they received the best treatment that they had received since entering the Air Force. The procedure involved the use of an NCO who was responsible for coordinating the activities of each flight when processing for deployment or turn-around. Office space for the NCO was made available in the Orderly Room. This permitted ease in scheduling and coordinating all functions.

Because of the mobility concept and methods of operation we use, a vast majority of our personnel are required to change positions frequently and work for new supervisors. This arrangement requires more Airman Performance Reports than is normally necessary in a fixed organization. To handle this unusual flow of Airman Performance Reports and to assure that every airman and NCO is rated timely and properly, we have adopted a system of APR Control and Review that is quite unique. This system involves using a top-quality NCO to monitor and maintain a suspense for all APR's as they are required. He then notifies the reporting official and obtains the APR. At this point the APR is processed through an APR Review Committee. After the report is approved by the Review Committee, it is typed in final form and sent back to the reporting official for his signature and discussion with the individual being reported upon. This system has not only increased the effectiveness of our reporting program, but has given these NCOs an invaluable opportunity to obtain first-hand knowledge of the Air Force Performance Reporting Program.

For many years, this squadron has been functionally organized into a series of Teams for mobile operations. During this reporting period we have renamed the Teams "Flights". While the arrangement did not change, it certainly added a better term and more tacit authority to the NCO in charge of each element. At the same time it provided a morale boost to personnel.

This has been another significant step in modernization of our capabilities both in people and equipment for their role in aerospace operations.

During this reporting period, a new management idea was implemented in the personnel function of this squadron. The idea was formulated and refined by MSgt Donald Garnett. The new management concept involved rearranging the personnel function into three (3) sections called, by short title, SAM: with "S" denoting Service, "A" denoting Accounting and "M" denoting Maintenance. This arrangement has proven highly satisfactory and will continue as long as we maintain our personnel records.

COMMAND VISITS AND INSPECTIONS:

Visitors to the squadron during the last half of 1960 included General Kelly (who visited all MATS units at Tinker AFB) in late October, Colonel Bedke (4th Weather Group Commander), and Lt Col Pournaras (4th Weather Group Deputy Commander) in August. Also, Colonel Bath (AWS IG) visited the squadron briefly in September.

Inspections received during the period included 4th Weather Group visits to two deployed Tornado Alley 1960 teams and the squadron in July and August, and an administrative inspection by OCAMA in July. These inspections, as well as Classification and Utilization visits by AWS and 4th Weather Group and a MATS Equipment Review and Authorization Team visit found the squadron in good health. Of the deployed teams (Team 7 at Cedar Rapids and Team 12 at South Bend) the Group Inspectors were very complimentary: Best rawinsonde stations they'd seen - fixed or mobile!

Within the squadron, inspection of personnel and facilities was conducted in a firmly programmed fashion. Stand-by inspections were held in the new billets the first Saturday of each month with supplemental Walk-Thru inspections on other Saturdays. Every building or location for which the squadron was responsible at Tinker AFB was inspected on a scheduled date with at least a monthly frequency. In addition, field visits were made by the Squadron Commander and staff members to each of our deployed operating sites. It is believed that this program built morale by bringing to light promptly and effectively, the many fine accomplishments of the squadron teams and individual personnel.

In December, the Squadron Commander accompanied the 4th Weather Group Commander in an inspection of the rawinsonde sites of the Atlantic Missile Range. The OIC of NAVU also took part in a portion of this visit. The visit provided us a valuable orientation with respect to the use of computer techniques in rawinsonde operation and checking work.

MORALE AND DISCIPLINE:

The morale of squadron personnel has, as usual, been exceptional. During October, personnel residing in the squadron billets moved into the new permanent barracks, which are of the latest Air Force design and a great improvement over the previously used temporary type. They feature air conditioning, central heating, 3-man rooms, and laundry facilities. Dayroom facilities are excellent and the new Service Club provides many recreational activities. We continued to have excellent participation in base intermural sports. The squadron basketball team won the pre-season tournament. Four (4) airmen (A1C Marek, A1C Minder, A1C Lake, and A2C Jenkins) were selected to play on the Tinker Air Force Base Team.

The only disciplinary action administered to squadron personnel involved one Article XV and one major traffic violation.

OPERATIONS:

Field Operations: Units deployed during the period were as indicated on

Attachment #3. The majority of the units were in support of Phase II, Tornado Alley and Tornado Sferics 1960. Exceptions to the Tornado Alley Program were as follows:

Cedar Rapids, Iowa: The team at this location was held over an additional 15 days after phase out of Tornado Alley (30 September 60) in support of a government sponsored project by Collins Radio.

The Great Salt Lake Dessert (Project Horsetail): This team was deployed to support a series of cubicle storage tests conducted west of Salt Lake City on the east edge of the Wendover Bombing Range. This project differed from most in that it was conducted in an extremely unpleasant area with the bare necessities of life available. The dust factor involved was such that only by constant, hard, diligent work was the mission accomplished.

Castle AFB, California: This team deployed in November 1960 to support the "Low Stratus" Project conducted each year at Castle AFB, California. Weather data collected by the team is utilized in forecasting the formation of low stratus clouds and/or fog in the San Joaquin Valley of California during the winter months.

Goodfellow AFB, Texas: This team was deployed in support of an ARDC project with high altitude balloons. Material gathered was utilized in forecasting the trajectory the balloons would follow when released. Our GMD-1A was also utilized to track the actual path of the balloons.

Eglin AFB, Florida: This team was deployed to support ARDC and was exclusively a surface observing mission.

Four (4) exhibits (Boy Scouts; Mammoth Springs, Arkansas; Oklahoma State Fair; and Oklahoma State University) portrayed to the public what a typical mobile rawinsonde team is composed of and how it functions. Squadron personnel explained how the Mobile Weather Teams obtain information that is of vital importance to aircraft operations and the role we play during the severe storms of the Tornado seasons. At Mammoth Springs, our unit was the only USAF exhibit and ably represented the Air Force and MATS.

Attachment #4 depicts a schedule of events that took place during the Tornado Alley and the Tornado Sferics critique which was held at the termination of Tornado Alley 1960. Results of this critique were two-fold:

All problem areas during pre-deployment, deployment, on-site operation, and recovery were discussed and many trouble areas eliminated. Further, NCO's gradually assumed a frame of mind that was highly beneficial for our winter training session.

Standardization of all flights was recommended and has been accomplished to the material benefit of all concerned. This standardization should assure a more efficient operation for future projects.

Survey trips were made to the following locations in preparation for Phase I of Tornado Alley and Tornado Sferics 1961:

Ft Smith, Arkansas - 1 December 1960
Sioux City AFB, Iowa - 3 December 1960
Memphis, Tennessee - 1 November 1960
Dyess AFB, Texas - 30 December 1960
Greenville AFB, Mississippi - 1 November 1960
Sewart AFB, Tennessee - 31 October 1960
Blytheville AFB, Arkansas - 17 October 1960

SFERICS OPERATIONS:

Six (6) Sferics teams were deployed as follows:

TEAM NUMBER	LOCATION	PERIOD
16	Goodland, Kansas	10 Mar 60 - 1 Oct 60
17	Sioux City, Iowa	11 Feb 60 - 1 Oct 60
18	Chanute AFB, Illinois	11 Feb 60 - 1 Oct 60
19	Richards-Gebaur AFB, Missouri	11 Feb 60 - 1 Oct 60
20	Tinker AFB, Oklahoma	Permanent Duty Station
21	Blytheville AFB, Arkansas	14 Feb 60 - 1 Oct 60

This squadron has been designated as the testing agency for the Cambridge Air Research Center for the FMD-1 sferics equipment through its experimental phase. This entails the responsibility for evaluating the equipment and reporting our findings. In conjunction with this, we fulfill the sferics requirements for the Tornado Alley operation.

Despite the necessity of placing three-level technicians in the field, a high degree of efficiency was maintained. Through the use of hot line communications the experienced technicians were able to aid the newly assigned personnel when necessary. Mr. Don Lewis of Stavid Engineering Company (hired as technical assistant for the Severe Weather Warning Center) visited all the sites except Goodland to provide technical assistance.

The Richards-Gebaur site experienced an electrical interference problem which could have been eliminated only by relocating the site. Temperature changes in the FMD-1 set caused difficulty in maintaining set alignment and necessitated constant recalibration. It was anticipated that replacement of iconoscope tubes would alleviate this trouble, but it did not. The Severe Weather Warning Center recommended that further research be made by Stavid to improve the circuit design of the FMD-1 sferics set. The sferics operation was hampered during the last two months of operation due to a shortage of operational test equipment. This problem will be resolved before the 1961 operation commences.

The equipment at Blytheville and Richards-Gebaur was returned to Tinker during October. It is anticipated that these sites will be relocated to southern states to increase the geographical area of the net. Equipment at the other sites was left in storage since these sites will probably be used in 1961. Major Richard Brown, SMC, plans to visit the squadron in the near future to assist in setting up the 1961 operations plan.

WEATHER EDITING OPERATIONS:

The Weather Editing Section of the USAF Zone of Interior Weather Relay and Monitor Station edits all the weather data relayed by stations over the AF Domestic Operational Weather Teletype network (IL90 Series) and the Synoptic Weather Network over circuits IL1, IL2, and IL3.

This function is performed in conjunction with the 1904th AACS Squadron, with which excellent working relations are enjoyed. The overall performance of the Editing Section continues in a very effective manner.

The domestic network was on a six circuit operation during this period. The system average effectiveness was 96.01% with an all time high during November of 96.92%. The scheduled bulletin effectiveness decreased slightly to 95.23%. The Service "C" FAA Circuit was increased from 75 to 100 words per minute during November which resulted in a more effective circuit.

The nature of the mission of the Weather Editing Section necessitates stabilization of personnel. Therefore, once an airman is assigned to this section, he remains in place while assigned to this squadron. Manpower studies made by personnel of this squadron and Air Weather Service justified the assignment of twelve (12) airmen. The latest Unit Manning Document, 30 September 1960, authorizes five (5) until FY 1/62, and then six (6). However, a letter from AWS authorizes the squadron to assign twelve (12) airmen from its resources.

RAWINSONDE VERIFICATION UNIT OPERATIONS:

The Rawinsonde Verification Unit (RAVU) checks all the rawinsonde observations taken by USAF units and those contracted by the USAF. During this period RAVU checked soundings monthly for 29 stations, a decrease of one (1) station as compared with the previous period. 3025 RAOBs were checked, of which 1789 were returned for correction. 1730 RAWINs were checked; 921 of these were returned for correction.

Information pertaining to the new AMT-2 radiosonde instrument was sent to all weather detachments having rawinsonde sections.

During the latter part of the period, a program was established to identify detachments which indicate continuous disregard of procedures and/or substandard performance. This information is sent to AWS per their request.

At the request of 4th Weather Group, a manpower study was made of the RAVU function to provide facts upon which they could base a request for a separate function code for RAVU. The request made by 4th Weather Group was disapproved by AWS.

Computerizing the RAVU checking system was investigated and found to be very feasible. Computer programming information was requested and received from Patrick AFB and Holloman AFB. The OCAMA Data Processing Division has agreed to support our program.

Five (5) detachment commanders attended our Rawinsonde Orientation Program. Their comments concerning the value of the program were highly favorable.

Approximately 6250 pieces of correspondence were processed by the RAWN Section. They consisted of routine correspondence, weekly and monthly error reports.

WEATHER EQUIPMENT MAINTENANCE:

Due to school quotas and overseas shipments we were very short of technicians (7 level) during Phase II of Tornado Alley 1960. We received seven (7) technicians from Chanute AFB to cross train into the 30230 field. These men were of high caliber and intelligent, but could be used to only a limited degree until upgraded. Having sent eleven (11) of our seven (7) level airmen to schools, we were forced to recall GMD-1 experienced technicians from Sferics sites to man Rawinsonde teams and replace them with three (3) level technicians (See SFERICS OPERATIONS).

A concerted effort was made to improve the professional appearance and operation of all meteorological equipment. During the winter training program the Operations Officer made weekly inspections of the maintenance activity. These inspections were instrumental in standardizing the facilities and instilling a competitive spirit among the team chiefs and their technicians. While the equipment was in the field, the technicians expended much effort toward maintaining it. As a result, it was in far better condition when the project ended than when it began. The high morale of the personnel and the excellent appearance of the equipment evoked favorable comments from 4th Weather Group staff visitors. No discrepancies were noted by Phase II Field Maintenance Quarterly Inspections.

Upon their return from Tornado Alley, all GMD-1's were put on pads for inspection and appraisal. Certain units were sent to IRAN, and others to the Field Maintenance Shop for repair. The balance of the equipment is being rehabilitated by our technicians.

4th Weather Group assisted us significantly in obtaining "hard to get" GMD parts. By 31 December the parts shortage problem was non-existent.

The ML-539 Hydrogen Generator was shipped to us for field testing under the auspices of the Cambridge ARDC. The generator was found to be structurally weak, but its operational design and safety basically sound. The cost to use hydrogen produced by the generator for rawinsonde runs is one-fourth (¼) that when using helium.

MATERIEL:

Supply of Deployed Operations: During the first half of this period, the supply section supported 13 Tornado Alley Teams at their operating locations. 41 individual shipments weighing a total of over 8,500 pounds were shipped via air freight, railway express, and motor van in support of these projects. Additional supplies were mailed and delivered by squadron vehicles. Two rawinsonde teams (Horsestall and Goodfellow) were outfitted with equipment and expendables for use on special projects as were three display projects (Scott AFB; Mammoth Springs, Arkansas; and Oklahoma State Fair). One complete set of rawinsonde equipment was shipped to Detachment 4, Patrick AFB, Florida in support of the Atlantic Missile Range project.

MATS Equipment Review Visit: The MATS Equipment Review and Authorization Team visited the squadron on 23 August 1960. There were no problems encountered. Of a total of 204 line items, the review team deleted only five (5) line items and added three (3). The total dollar value of the squadron supply account after these transactions was $1,164,240.09.

Vehicle Operations: On 20 October we were issued 13 new commercial type 2½-ton International Harvester Cargo trucks to replace 13 of the 21 M-35 (6 x 6) cargo trucks. By 10 December, the remaining eight (8) new trucks were received. The changeover to commercial type trucks had advantages, as well as disadvantages. One advantage is the availability of commercial vehicle parts. This conversion increased our on-the-road mobility, but reduced our off-the-road capability, due to the loss of traction in changing from the 6 x 6 to the 4 x 2 drive assembly. These new trucks were issued without spare tires or rims, and without tarps or bows. It was necessary to modify the bows and tarps from the M-35 trucks. Electrical modifications were also necessary to make our M-Series trailers compatible with the commercial vehicle electrical system. As of the 31st of December, funds had not been received to procure spare tires and rims. The vehicles of this squadron were drive a total of 19,886 miles during this period. This mileage included all convoys to operating locations and local driving. There were no major vehicle accidents. The drivers training program was sponsored by the Squadron Motor Pool.

Operation Hardtack Equipment: The equipment returned to Tinker AFB for rehabilitation and storage by the squadron under the project name "Bitter Pill" remained in storage through the entire reporting period. On 19 September 1960 a complete listing of each item in serage with recommended disposition instructions was forwarded to Headquarters ARDC, Attention: Col Carl W. Robbins, Jr. No reply has been received.

Repackaging of TMQ-1 Surface Observing Kits: Three of the five TMQ-1's on hand in this squadron were repackaged in accordance with AWS Directives.

Repackaging of the two remaining kits will be accomplished upon receipt of the parts required for their completion. New packing cases were not required. The required level of the expendables for each set is now only 60 days in accordance with AWS instructions.

TRAINING:

Three (3) airmen were on OJT from the one (1) level to three (3) level, forty-six (46) from the three (3) to the five (5) level, and twenty-seven (27) from the five (5) to the seven (7) level. The basic problem of mission requirement versus OJT requirement continued to exist. In order to overcome this problem and insure the maximum success in the OJT testing, we withheld testing for many individuals during the October testing cycle until all detached units returned from TDY, at which time a well rounded training program was established which satisfied both mission and OJT requirements.

The planning for our winter training program began in August and training commenced on 17 October 1960. This training encompassed rawinsonde operation, (formal classroom and practical application), surface observing (formal classroom and practical application), vehicle operation, and all other general military subjects required by Air Force Directives. Attachment #5 is a graph showing dates during which each phase of training was accomplished.

The winter training program included the organization of six (6) surface observing flights which used mobile weather station equipment. In addition to the surface observing function performed by personnel of these flights, 740 man hours of sferics training was given to them by the Squadron

Maintenance Section. All three (3) level airmen received comprehensive surface observing training to prepare them for the five (5) level APT test which is based primarily on surface observing subjects. The best available instructors were utilized for this training and, upon completion of it, 4th Weather Group prognosis tests were administered to determine which airmen should be tested during the January 1961 testing cycle. The training for five (5) and seven (7) level airmen was devoted primarily to actual rawinsonde operation.

The objective of the winter training program was to prepare personnel for a test exercise which was scheduled for the last two (2) weeks in January. The plan for this exercise was completed in December and encompasses actual mobile operation, under simulated field conditions, of surface, rawinsonde, and sferics observing. The exercise will be as realistic as possible and is designed to test the squadron capability to perform any mission which may be levied upon it during 1961.

Nine (9) airmen were administered the five (5) level APT; of those, five (5) received passing scores. Also, thirteen (13) airmen took the seven (7) level APT; of these, twelve (12) passed.

Seven (7) maintenance personnel attended the Detachment 5, 4th Weather Group Maintenance Indoctrination Course which is conducted in accordance with AWSR 50-16. Six (6) of the seven (7) were administered the 30230 AFSKT with five (5) attaining passing scores.

The squadron participated in the Weather Officer Procurement Program during this reporting period. All squadron personnel were briefed on the various programs leading to a Commission and Weather Officer training.

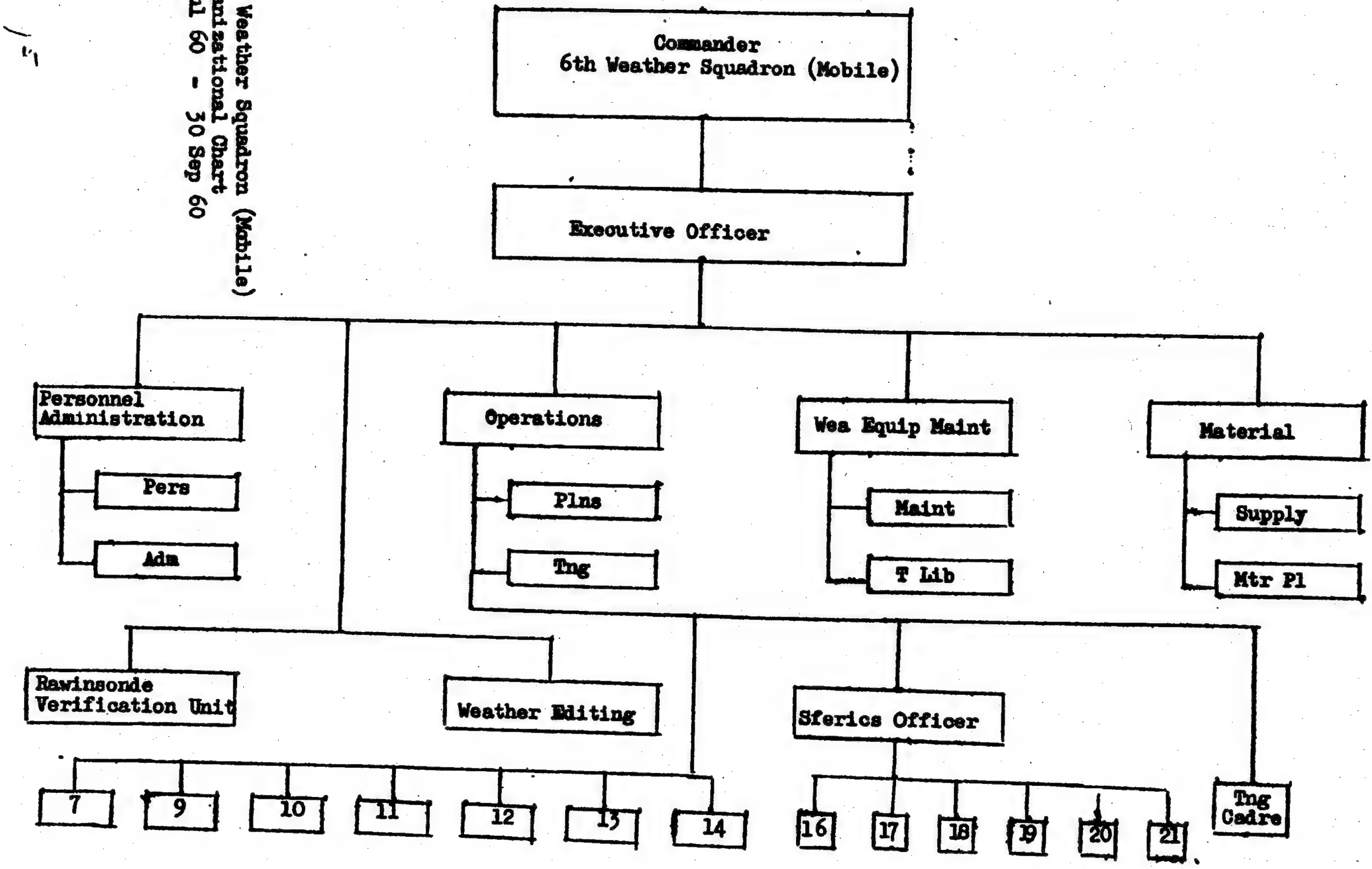
Support in publicizing and promoting this program was solicited from the following local agencies:

Tinker AFB Education Office
University of Oklahoma, Norman, Oklahoma
Tulsa University, Tulsa, Oklahoma

INFORMATION SERVICE PROGRAM:

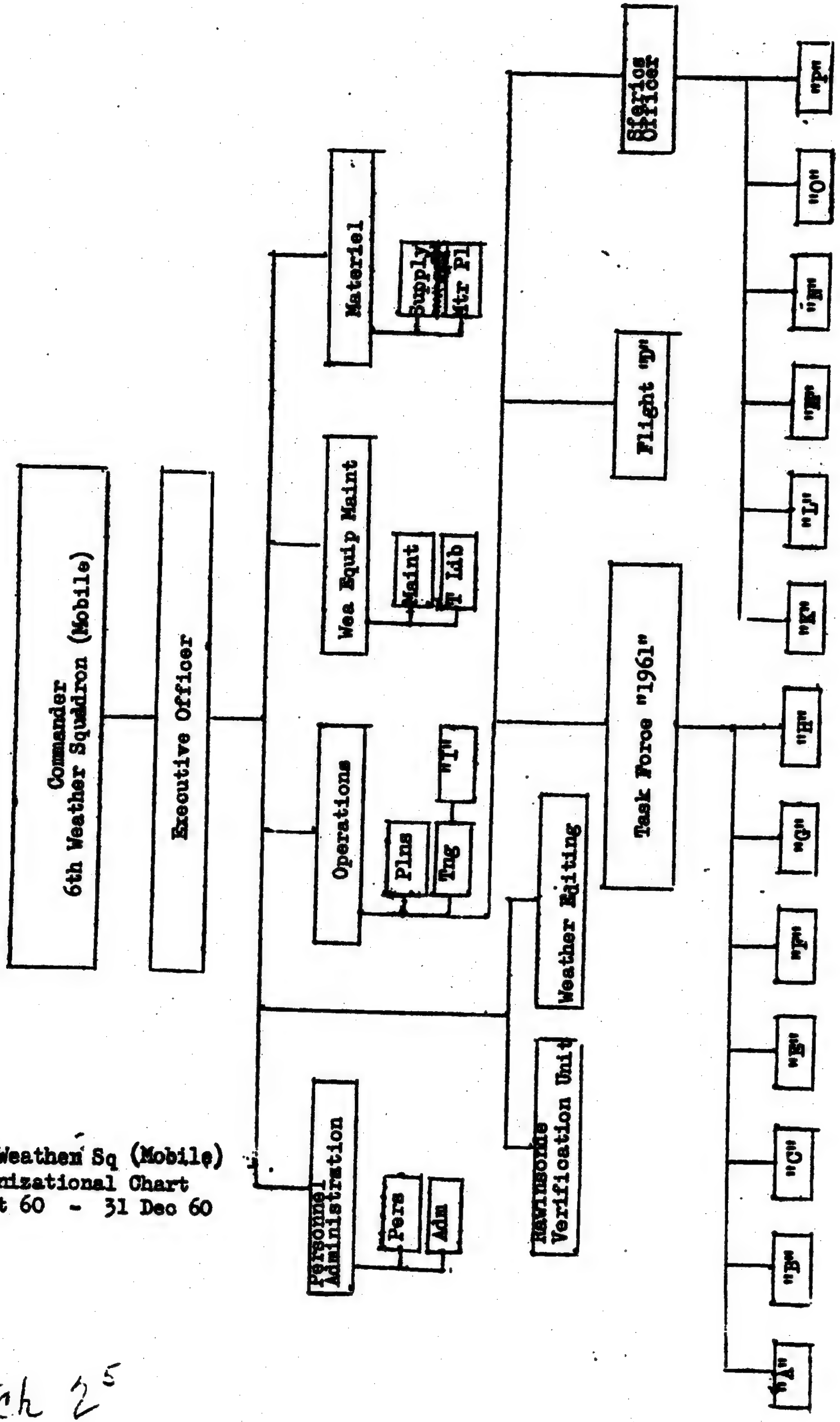
The Squadron continued to have a very active information service program. Col Fusin was the guest speaker at two (2) Oklahoma City Lions Club meetings. He described the squadron mission and what role it plays in forecasting severe weather over the central United States. Acknowledgment was received of a donation from the squadron to the Falcon Stadium Fund Drive. The squadron designation and motto will be inscribed on one of the stadium seats. An Air Photographic and Charting Service Team from Orlando, Florida filmed the operation of a Mobile Weather Team from Tornado Alley for possible use in the Air Force News Review.

The Air Weather Service family on Tinker AFB gave a Christmas Party for twenty-three (23) under privileged children in the Midwest City area. This party included lunch at a local cafeteria, a visit with Santa Claus, who gave each child two (2) gifts, and a trip to a local clothing store where the children were completely outfitted.



6th Weather Squadron (Mobile)
Organizational Chart
1 Jul 60 - 30 Sep 60

Atch 15

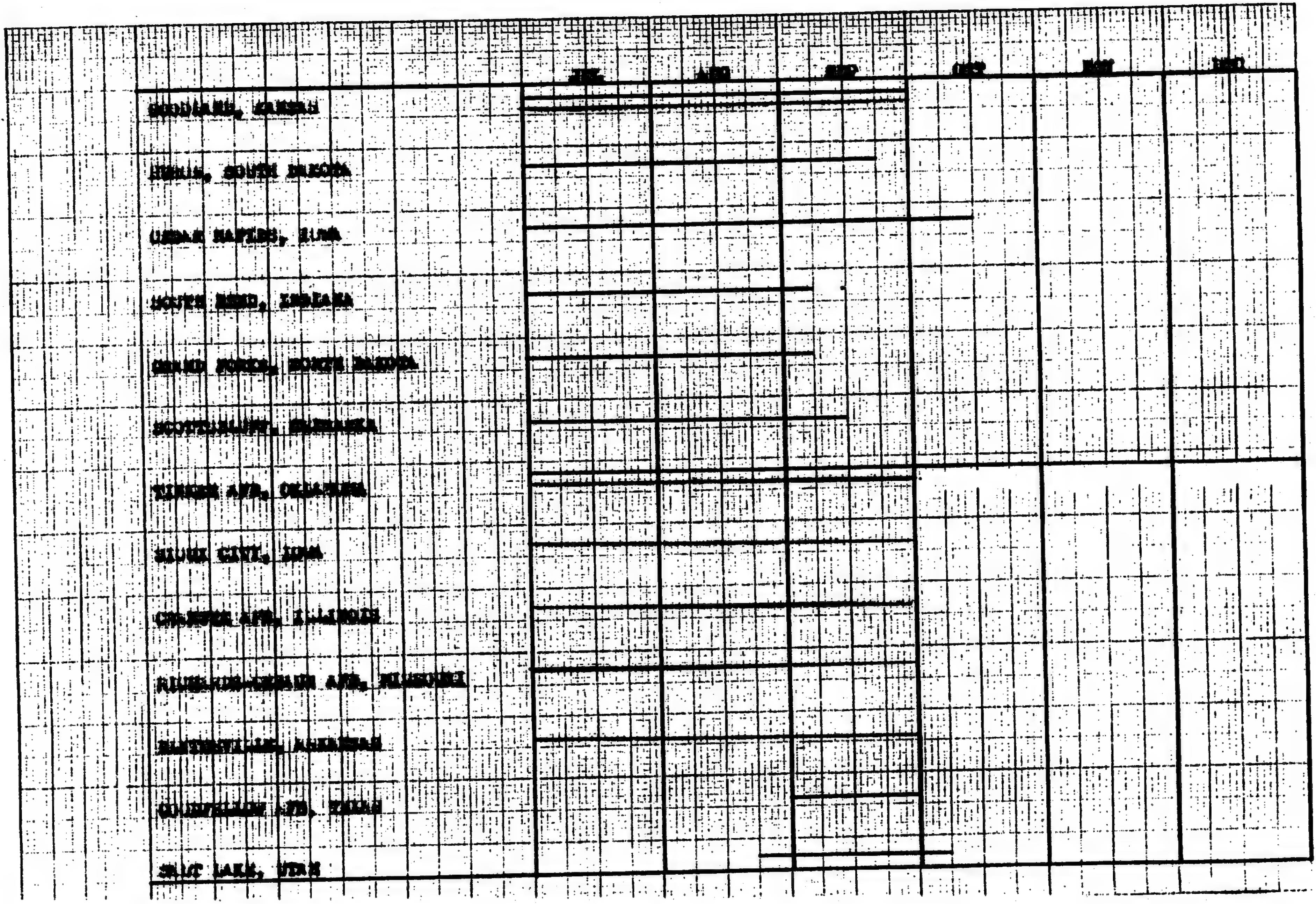


6th Weather Sq (Mobile)
Organizational Chart
1 Oct 60 - 31 Dec 60

Atch 2^{5}

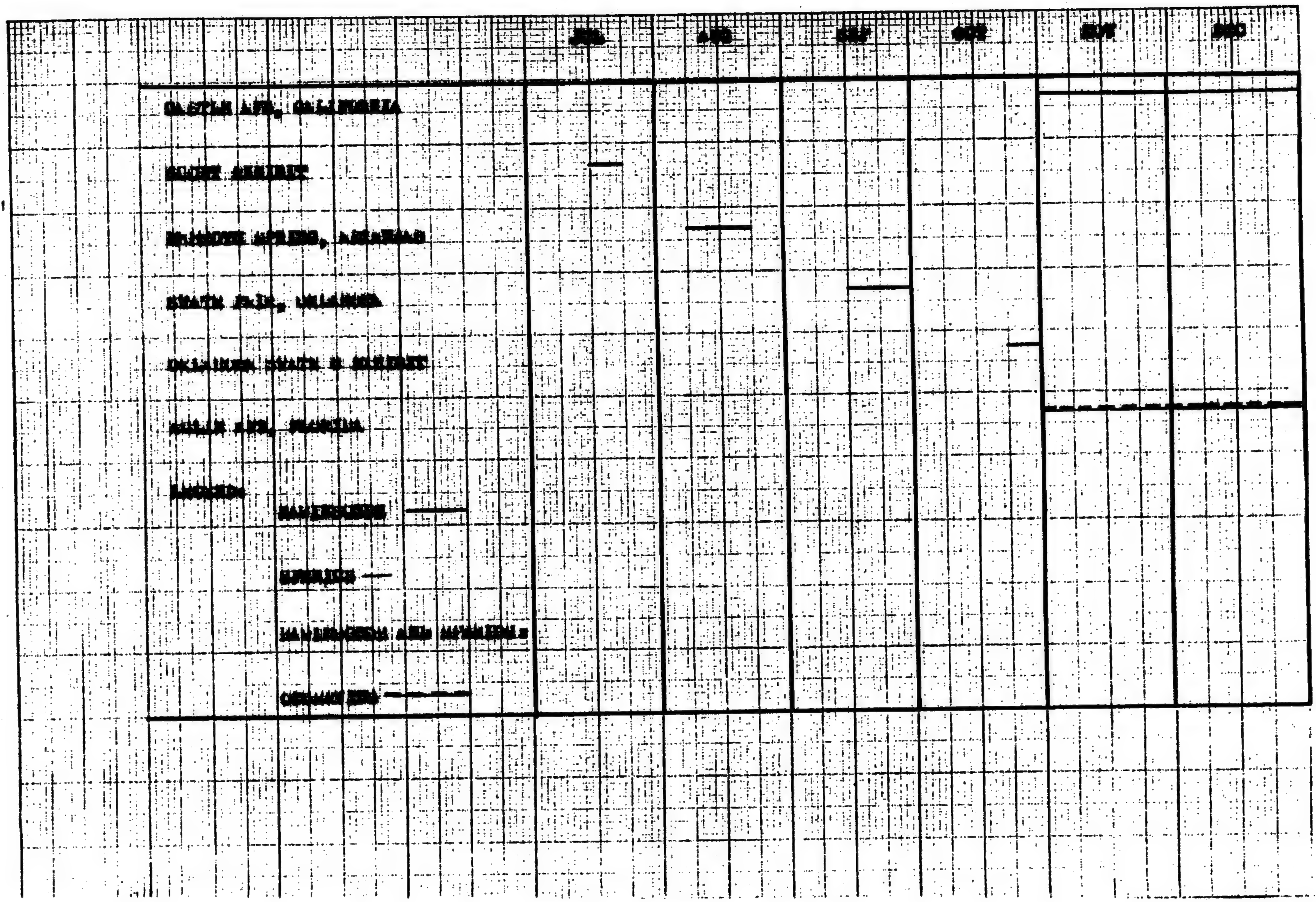
K&E 20 X 20 TO THE INCH 358-10
KEUFFEL & ESSER CO.

Atch 35



20 X 20 TO THE INCH 358-10
KEUFFEL & ESSER CO.

Atch 5



AGENDA GUIDE FOR CRITIQUE OF 1960 OPERATIONS

1. Advance planning and coordination
a. Outfitting
(1) Equipment (Met and Motor Pool type)
(2) Spare parts
(3) Expendables
(a) Operational
(b) Administrative

b. Training
(1) Operational
(2) General Military

c. Administrative
(1) Pay
(2) Reports
(3) Regulations

d. Operations
(1) Surveys for siting and support services
(2) Funding
(a) TPA and travel
(b) Contractual services
(3) Operations orders - Routes.
(4) Selections of teams and sites

d. Command
(1) Inspection of teams
(a) At training site (S-40)
(b) Pre-deployment (truck and loading)
(2) Inspection of TPA vehicles

2. Deployment and Establishment of the Site
a. Movement
(1) Military vehicle
(2) TPA
(3) Military aircraft
(4) Commercial

b. Ground Safety
(1) Reporting of accidents
(a) Vehicle
(b) Personnel
(2) Hazards
(a) Driving practices
1. Rest stops
2. Hours of Driving (daylight)

c. Arrival
(1) Making Contacts
(a) Det Comdrs at Military Site

Atch 4^{5}

- (b) Airport Manager at Civilian Site
- (c) Others for support services

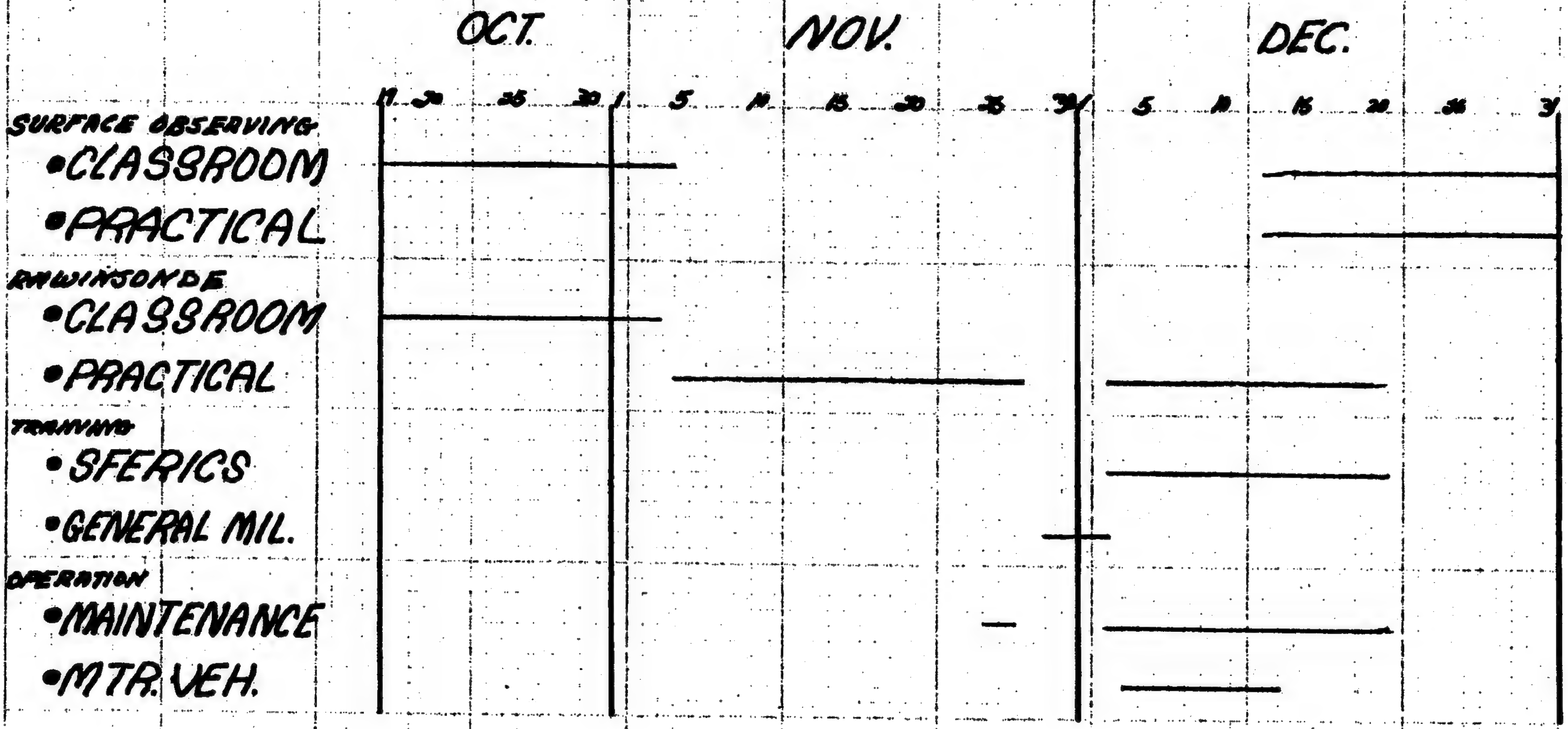
- (2) Setting up equipment
- (3) Preliminary operations checks
  - (a) Team equipment
  - (b) Support services and equipment

3. Operational Phase
- a. Squadron Functions
  - (1) Continuing monitoring
    - (a) Operations
      - 1. Weekly Operations Reports
      - 2. RAVU Reports
      - 3. Telephone Contacts
      - 4. Correspondence
    - (b) Administration
      - 1. Weekly Operations Reports
      - 2. Per Diem and travel vouchers procedures
    - (c) Material
      - 1. Weekly Operations Reports
      - 2. Custody of property and transfers of property
  - (2) Command and Staff Visits
- b. Teams
  - (1) Operating problems
  - (2) Adequacy of local services
    - (a) Messing
    - (b) Transportation and mailing
    - (c) Other
  - (3) Adequacy of RAVU Reporting
  - (4) Logistical matters
    - (a) Maintenance support
      - 1. From Squadron
      - 2. From AMS field maintenance shop
    - (b) Material support
      - 1. Operating supplies
      - 2. Administering supplies
  - (5) Problems with reports
  - (6) Security problems
  - (7) Disciplinary problems
  - (8) Finance procedures

4. Termination of Project and return to TAFB
- a. Discontinuance of services
- b. Packing gear
- c. Payment of all personal bills
- d. Policing of operational area
- e. Return travel (see paragraph 2a)
- f. Ground Safety (see paragraph 2b)
- g. Check-in of personnel and equipment at TAFB
- h. Reestablishment of personal accommodations at TAFB

Atch 4⁵

WINTER TRAINING SCHEDULE



Atch 5

KEY PERSONNEL

Headquarters

Col Hanson H. Bodke, AO437681, Commander
Lt Col Stephen V. Pannamonte, 9620A, Deputy Commander
Lt Col Louis A. Weaver, AO681441, Dir of Operations & Training
Lt Col William P. Mullen, AO437676, Dir of Technical Services
Maj Wilbur E. Leonard, AO683633, Dir of Materiel
Maj James R. Cary, 33945A, Dir of Personnel
Maj Eugene J. Millikin, 15081A, Group Inspector
Maj Peggy Lee Schimmell, 30983W, Chief of Administration
Capt Richard H. Hilley, AO1885779, Commander, Hq Sq Section
Capt Orville R. Shields, AO702967, Group Comptroller

Staff Meteorologists

Lt Col Lawrence Gwaltney, 12396A, 6594th Test Wing
Maj David J. Eddleman, 48308A, AF Command & Control Development Div
Maj William R. Connell, 17116A, AF Ballistic Missile Division
Maj Eugene C. St Clair, 20897A, Wright Air Development Division

Detachment and Squadron Commanders

Lt Col Charles G. Vaughn, AO666815, Detachment 1
Lt Col Leroy C. Everson, 8454A, Detachment 2
Maj Ralph G. Wallace, 33171A, Detachment 3
Lt Col Arthur F. Gustafson, AO420867, Detachment 4
Maj Kenneth E. Powell, AO432729, Detachment 5
Maj Stephen L. Rude, AO683589, Detachment 6
Capt William G. French, AO576610, Detachment 8
Maj Ernest F. Walker, AO433115, Detachment 10
Lt Col Edward J. Daissal, 5458A, Detachment 11
Maj James R. Johnson, AO658383, Detachment 12
Maj Charles R. Doyle, Jr., 14392A, Detachment 13
Maj John D. Hare, 12714A, Detachment 14
Maj Alfred L. Newman, AO437808, Detachment 15
Lt Col Oscar Tyus, 5808A, Detachment 16
Capt Lewis H. Christensen, AO1858684, Detachment 17
Maj Frank B. Dukes, AO790538, Detachment 18
Maj James K. Coleman, AO432181, Detachment 21
Maj Albert J. Pilkington, AO434806, Detachment 23
Maj William F. Moore, 34151A, Detachment 24
Lt Col Gilbert H. Woods, 37878A, Detachment 25
Maj Kenny D. O'Bryan, 15817A, Detachment 28
Lt Col Raymond Fusin, 34662A, 6th Weather Squadron

PERSONNEL CHANGES

The following changes in Group Headquarters personnel occurred during the report period.

LOSS & REASON	REPLACEMENT
Lt Col Hilton H. Hume, 7146A Deputy Commander, reassigned	Lt Col Stephen W. [illegible] 96[illegible]A
Lt Col Stephen W. [illegible] 96[illegible]A, Dir of Opns, assumed Deputy Commander position	Lt Col Lemon A. Weaver AO863411
Capt Winston H. Felton, AO948230 Comptroller, Voluntary Release from Active Duty	Capt Orville A. Shields AO704967
Capt Charles F. Watson, Jr. [illegible]A, Dir of Admin Svcs and Hq Sq Commander, reassigned	Capt Richard H. Miller AO1863779
Major Charles C. Haddon, AO509290 Dir of Personnel, retired	Major James R. Gray 13045A

Other changes in key personnel are as follows:

LOSS & REASON	REPLACEMENT
Major Daniel E. McPherson, Jr. 17907A, AFRBD, Staff Meteorologist, Reassigned	Major William R. Connell 17116A
Major Ernest W. Wilson, Jr. AO[illegible]70, Det 13, relieved due to assignment of ranking officer	Major Charles R. Hoyle, Jr. 14393A
Major Frank R. Deane, AO796133 Commander, Det 18, reassigned	Major Ervin E. Wittman AO689716
Major Paul T. Ulrich, 18160A Commander, Det 20, reassigned	Major Kenny D. O'Bryan 13817A

AUTHORIZED AND ASSIGNED PERSONNEL

	1 JULY [illegible]		31 DEC [illegible]	
	Authorized	Assigned	Authorized	Assigned
OFFICERS	220	216	218	206
AIRMEN	769	762	761	729
CIVILIANS	17	17	17	17

4WG REGULATION
NO 55-1

HEADQUARTERS, 4TH WEATHER GROUP
AIR WEATHER SERVICE (MATS)
Andrews AFB, Wash 25, D. C.
29 September 1960

Operations

SURFACE WEATHER RECORDS CHECKING

PURPOSE: To outline procedures for forwarding certain surface weather observational records to this headquarters; provide for their subsequent checking and the issuance of error statistics, thereby furnishing detachment commanders and this headquarters with information useful for management control. (This checking program is limited in that it cannot take into account the representativeness and timeliness of the observations. These aspects are of equal or greater importance and must be actively monitored by all detachment supervisory personnel).

1. Scope: This regulation is directive on all detachments making weather observations and upon the records checking section of 4WGOT.

2. Forwarding Records: All original surface weather records which are intended for ultimate filing at Data Control Division under provisions of AWS SUP-1 to AFM 181-5 will be forwarded to this headquarters (ATTN: 4WGOT/Records Checking). They will be accompanied by one copy of AWS Form 70 and forwarded by the 3rd working day of each month for the preceding month. They should be packed in such a manner as to ensure no damage enroute. Wind rolls may be forwarded under separate cover.

a. Stations equipped with telautograph will also include the telautograph rolls for the same period. The data will be submitted in continuous rolls for each day local time. The date will be indicated at the end of each roll so that it is clearly visible to records checking personnel. After checking, the records checking section will return the rolls to the detachments.

b. Stations which do not have telautograph will forward the AWS Form 40's and a list of the date/time groups for all in-station transmission teletype discrepancies noted by the detachment. A description of the error is not necessary.

c. Detachments will enclose a completed form letter (Attachment #1) with each month's records. An explanation will be entered in the remarks section whenever:

(1) At stations equipped with a ceilometer the percentage of measured ceilings 2000 feet or below is less than 85% (desired goal: 100%); or at stations with a ceiling light the percentage is less than 60% (desired goal: 75%).

DISTRIBUTION:
D (except Dets 4,8,23, 25, &28)
OPI: 4WGOT

Atch 5

(2) Percentage of specials which are record/specials exceeds 25%.

d. The remarks section may also be utilized to explain how discrepancies are being reduced; to discuss difficulty encountered in any phase of observing (such as interpretation of specific paragraphs of Circular N), and to make any pertinent suggestions.

3. Checking and Scoring Procedures:

a. The records will be checked by each detachment for WBAN and transmission errors, the following being among the items which should be given special attention (see also Atch #1):

(1) Accurate recording, dissemination and transmission of observations (WBAN vs Circular N, AWS Form 40, telautograph roll, wind roll, radar log, etc.).

(2) Representative and timely observations (monitored closely by detachment supervisory personnel as observations are being taken).

(3) Legibility and neatness of all forms and charts.

(4) Pilot reports.

(5) Proper additional data entered on all records; i.e., headings, pen touches, etc.

b. Error lists of WBAN and dissemination discrepancies noted at this group will be forwarded to each detachment. If errors are not considered valid, they should be contested within seven days of receipt of the error list. Contested teletype and telautograph errors will be accompanied by the teletype scan or telautograph roll. Our records checking section will then compute a monthly observing performance index for recording and disseminating observations, expressed in errors per hundred observations based on the following:

(1) WBAN error rate will include in-station errors, errors noted by the 4th Weather Group, and errors noted on the AWS Hq Form 0-123 by Data Control (including contrast and legibility errors).

(2) Transmission error rate will include in-station errors and errors noted by the 4th Weather Group.

This information, together with KTIX teletype procedural errors (4WGR 100-2), will be published in the monthly 4th Weather Group Staff Digest.

c. No errors will be charged for in-station WBAN, teletype and local dissemination discrepancies provided a correction was transmitted within 15 minutes of the original transmission. COR's for an error made on the H+45 scan may be appended to the next hourly observation. Half errors will be charged for all in-station errors that do not meet these criteria. Telautograph errors noted by the station records checker will be circled in red on the telautograph roll. Full errors will be charged for all discrepancies noted by this headquarters and Data Control.

d. Rating will be as follows:

Outstanding	.00 to .50
Very Fine	.51 to 1.50
Typically Effective	1.51 to 2.50
Marginal	2.51 to 3.00
Unsatisfactory	3.01 or more

4. Charts, Graphs and Forms:

a. Detachments will maintain appropriate charts and/or graphs to monitor the following for both individual and detachment performance, the purpose being to isolate problem areas and take prompt corrective action:

(1) WBAN 10 recording errors.

(2) Transmission and dissemination errors.

(3) KTIK procedural teletype errors.

(4) Actual times of specials to monitor continuous weather watch.

(5) Percentage of record/special vs special observations.

(6) Percent of measured to estimated ceilings below 2000 feet.

b. When there is a local requirement for an observer's computational worksheet to assist in recording observations on WBAN 10A/B (particularly for new observers), either 4WG Form 55 or AWS Form 84 will be used. Completion of these forms is self explanatory. They will be destroyed after local records checking has been completed and any corrective action taken.

5. Letter Required: Whenever the observing performance index for recording and disseminating observations exceeds 3.0, the Detachment Commander will, within 7 days after receipt of the 4th Weather Group Staff Digest in which it appears, submit a letter to this headquarters, giving reasons for the unsatisfactory performance and indicating the corrective action taken.

FOR THE COMMANDER

[illegible] H. MILLER
Captain, USAF
Chief of Administration

2 Atch
1. 4WG Form Letter
2. 4WG Form 55

REPLY TO
ATTN OF:

SUBJECT: Observing Performance Information

TO: Hq 4th Weather Group (4WGOT)

1. Under provisions of paragraph 2c, 4WGR 55-1, the following information is furnished for the month of ____________;

a. Total number of observations ______

b. Total number of specials (including record/specials) ______

c. Total number of record/specials ______

d. Total number of specials FIBI'd ______

e. Total number of ceilings 2000 feet or less ______

f. Total number of measured (A,M,B,P,W) ceilings 2000 feet or less ______

g. Total number of pilot reports recorded ______

h. Total number of pilot reports transmitted ______

i. Total number of red in-station corrections ______

j. Total number of red COR's transmitted ______

k. Remarks (paragraph 2c,d, 4WGR 55-1): See reverse side.

2. These statistics have been carefully analyzed, permitting me to isolate problem areas and take such action as will further improve my observing performance in those areas which are not up to my standards.

____
____
____
Detachment Commander

Atch 1 to 4WGR 55-1

DATE	[illegible]											
STATION												
STEP/TIME	01	02	[illegible]	[illegible]	05	06	07	[illegible]	09	10	[illegible]	[illegible]
1. DRY BULB												
2. WET BULB												
3. DEPRESSION												
4. DEW POINT												
5. RELATIVE HUMIDITY												
6. TEMPERATURE												
7. 12 HOUR TEMP												
8. TOTAL 6 & 7												
9. AVERAGE TEMP												
10. STATION PRESSURE												
11. PRESSURE MBS												
16. CORRECTION												
17. S L PRESSURE												
12. DEW POINT												
13. 12 HOUR DEW POINT												
14. TOTAL 12 & 13												
15. AVERAGE DEW POINT												

SEE REVERSE

4WG FORM SEP 60 55

COMMANDER'S COMMENTS

If your experience is typical of that of the majority of Detachment Commanders, your career has allowed you neither the duty forecasting experience, nor the academic training of some of your personnel. Yet your unit's technical performance is contingent upon your fine management and technical guidance. In short, I regard you as the technical leader of your unit.

You may feel that I have placed requirements on you for the highest quality of service without giving you the tools for the job. However, you will agree that in achieving true professionalism as a military meteorologist, leadership is a primary factor; technical superiority is important but secondary.

I repeat: I regard you as the technical leader of your unit. This does not mean that, among the personnel of your unit, you must possess the highest technical qualifications. It does mean that your interest in the problems of local meteorological support and your efforts toward solving these problems must be strong and unceasing. It means optimal use of resources available to you.

I regard as exemplary those of you who know your people, their competence and their performance. I have found, for example, that some detachment commanders take the time to work an occasional shift. Some frequently work up soundings. They actively participate in the [illegible] program and in seminars. Such activity is not only commendable but necessary.

We have a wealth of technical ability in the Group. Technical leadership will insure that this ability is best employed. This, coupled with a team effort to achieve your objectives, will assure professional achievement.

/s/ Stephen W. [illegible]

STEPHEN W. [illegible]
Lt Colonel, USAF
Deputy Commander

MANAGEMENT REPORT

1. Program Number

2. File Designator

3. Title

4. Program Manager

5. Other Agencies Participating

6. Related Endeavors

7. Date Received/ Originated

8. Programmed Completion Date

9. Project or Task Scientist

10. Manpower Computation

11. Coordination

12. Approval

13. Narration:

1. HQ FORM 0-30 ([illegible])

158

1

HEADQUARTERS
AIR FORCE COMMAND AND CONTROL DEVELOPMENT DIVISION
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
LAURENCE G. HANSCOM FIELD BEDFORD, MASSACHUSETTS

REPLY TO
ATTN OF: [illegible]/Maj Eddleman/~~[illegible]~~ 3915

6 June 1960

SUBJECT: Staff Meteorological Services

TO: CCX CCC CCS
CCM CCR CCF

1. The Staff Meteorological Office has been established under the DCS/Plans & Operations. It is manned by a meteorologist attached to AFCCDD from the 4th Weather Group. The purpose of this letter is to describe the functions of the staff meteorologist for your information and guidance in the use of his services. Attached is a letter from ARDC concerning this utilization.

2. The Air Weather Service (MATS) is organized to support the Major Air Commands functionally. The 4th Weather Group at Andrews AFB supports the Air Research and Development Command and the Group Commander serves as staff meteorologist to the Commander, ARDC. Normally, the Weather Detachment Commander at each base will also serve as the staff meteorologist to Air Force units at that base. These responsibilities have been separated at Hanscom Field. The Weather Detachment Commander provides operational, day-to-day weather observation and forecasting support to base activities while the staff meteorologist, under provisions of ARDC Regulation 80-7, provides assistance in:

a. Consultant service and advice to System Project Offices and associated contractors regarding environmental effects on the Systems. These services and advice are rendered with the assistance of technical personnel available at higher weather echelons and in cooperation with Geophysics consultant personnel of the Geophysics Research Directorate, ARDC. These services encompass technical advice on meteorological aspects of test plans, equipment design, systems support requirements, site selections and installations engineering as well as advice on meteorological considerations which have an impact on the economy, relevancy and adequacy of systems and systems concepts.

b. Climatological analyses and studies for the design, development, testing, installation and operation of Systems or components of Systems. These analyses and studies may range from a simple collection and correlation of climatological data, which is available in the comprehensive [illegible] files in the office, to a comprehensive analysis which may require several months to complete by use of the data and the electronic computer available only at the National Weather Records Center. A majority of problems will require this machine processing of weather data and considerable lead-time is required for the proper solution of most problems.

#CC 7

Exhibit #1

HEADQUARTERS
4TH WEATHER GROUP (MATS)
United States Air Force
Andrews Air Force Base
Washington 25, D. C.

REPLY TO
ATTN OF: 4WGOT

25 November 1960

SUBJECT: RAREP Analyses

TO: All Dets, O/L's, and 6th Wea Sq

1. On 15 December 1960 a new facsimile schedule is due to go into effect. Not only will the speed of transmission be increased to 120 scans per minute, but among the charts transmitted will be 3-hourly analyses of RAREPS.

2. These analyses will come to you on a standard U.S. polar stereographic weather chart with a scale of 1:10,000,000 and physical dimensions of 18"x13". Valid time will be 50-55 minutes before the moment the chart appears on your 1R2 receiver. Planned transmission times are:

0050Z
0350Z
0650Z
0955Z
1250Z
1550Z
1850Z
2155Z

For a complete listing of the new facsimile schedule, see the attachment to AWS letter, "Pre-Briefing Display for Transient Pilots," 14 Oct 60.

3. Additional information concerning these planned RAREP analyses is attached. After you have utilized the analyses for several months, your comments concerning their usefulness and suggested changes would be welcome.

FOR THE COMMANDER:

LORAN A. WEAVER
Lt Colonel, USAF
Director of Operations & Training

1 Atch
RAREP Analyses

Atch 6

RAREP ANALYSES

The RAREP analyses to be transmitted on IR2 beginning 15 December 1960 will be prepared by U.S. Weather Bureau radar analysis experts at Kansas City, Missouri, based upon USWB radar observations as supplemented by reports from USAF radar equipment.

The Weather Bureau will soon have a WSR-57 at each of its primary radar installations and WSR-1, 2 & 3 at its secondary installations. Each WSR-57 will be operated by a team of five men on a 24-hour a day basis. This gives ideal coverage time-wise. The USWB operators have been well trained and will not have other duties except to conduct radar research and studies during those periods when radar echoes are not in evidence. These specialists, working fulltime, should produce excellent analyses.

Echo interpretation is not the simple, easy task of following blips on an air traffic monitoring radar scope. In order to illustrate the difficulty, let us consider one of the most obvious weather features, a squall line. A squall line is a living, constantly developing phenomenon which manifests itself on the radar scope with a continually changing form. A squall line is unmistakable to the weather observer, but on the scope it is not seen as a simple, uniformly moving echo pattern. On the scope, the squall line is depicted by one or more shorter thin line echoes. The whole zone may lengthen or shorten and rotate while moving with a specific velocity. The echo elements will move differently from the zone itself; they may even move at different speeds and directions from each other and from the whole zone. Further confusion can be generated by ground echoes, angels, sferics, man-made interference, and loss of important distant echoes through attenuation. Weather features less obvious and clear-cut than a squall line will be even more difficult to follow. Scope interpretation is truly a job for the trained, experienced, dedicated professional.

The WSR-57 operates with a 10-cm wave length which gives it less attenuation and sensitivity than our 3-cm CPS-9. Still it can pick up all precipitation and significant cumuliform development. The Weather Bureau radar has a step gain control and an iso-echo feature which enables the operator to make an accurate measurement of echo intensity. The step gain control gives an accurate control of gain. An internal checking device guarantees consistent, even functioning of radar power by revealing fluctuations in the operation of radar components. The iso-echo feature eliminates strong echoes which thereafter stand out as conspicuous holes in the echo pattern. In addition to showing intensity the step gain control frequently enables one to distinguish between cumuliform and stratiform clouds.

Up to now radar operators have been interested only in their local areas. The result was a collection of disconnected, seemingly unrelated observations. Starting in December, radar operators will become network conscious and those with the U.S.W.B. will function as a team producing one complete integrated analysis over the U.S.A. east of the Continental Divide.

With the new set-up we can expect to eliminate a number of faults of our present observations. Too often echoes are reported as "strengthening" when approaching a station and as "weakening" when leaving the same station. With full-time observers continually scanning the scope, continuity of echo development will be maintained. The WSR-57 allows the operator to plot successive positions of the echo directly on the [illegible] with no parallax error. Automatically operated motion and [illegible] cameras take pictures for research. These will also be [illegible] by the Kansas City RADU Office for quality control and to [illegible] best techniques are used. Mr. Hal Foster, a former AWS [illegible] for nine years, is chief of the ten-man staff at RADU.

[illegible] unusual applications of the WSR-57 will also be made. [illegible] unit which is located at some distance from the radar, [illegible] a transponder connected with a rain gauge. The response [illegible]sponder to radio energy which it receives from the radar [illegible] in direct proportion to the quantity of rain water in the [illegible].

[illegible] another precipitation application, a Geiger Counter (scintillograph) [illegible] over a cobalt rod buried in the ground. Snow accumulating [illegible] ground covers the cobalt rod and lessens the geiger count in [illegible] to the snow pack. The geiger count can be interrogated by [illegible]. These two devices will give immediate measurements of rain- [illegible] snow pack at remote sites.

[illegible] stand to profit greatly from the new radar analyses in convenience, [illegible] and most important, in more accurate knowledge of the weather. [illegible] also contribute by providing more accurate CPS-9 radar reports. Mr. Foster has emphasized that "we cannot possibly put [illegible] analysis unless the Air Force reports are accurate."

Prepared by 2WGTS,
November 19[illegible]0

RADU ANALYSIS LEGEND

COVERAGE

⊕ Echoes cover over 9/10 of the area

⦷ 5-9/10 coverage

⦶ 1-5/10 coverage

⊙ less than 1/10 coverage

● strongest cell

ECHO DESCRIPTION

∩ convective

— stratified

S strong

M moderate

W weak

V very

+ increasing intensity

++ rapidly increasing intensity

+— slowly increasing intensity

— decreasing intensity

—+ rapidly decreasing intensity

—— slowly decreasing intensity

$\underline{hhh}$ average tops of echoes (hundreds of feet)

$\underline{\underline{hhh}}$ maximum tops

$\overline{hhh}$ bases

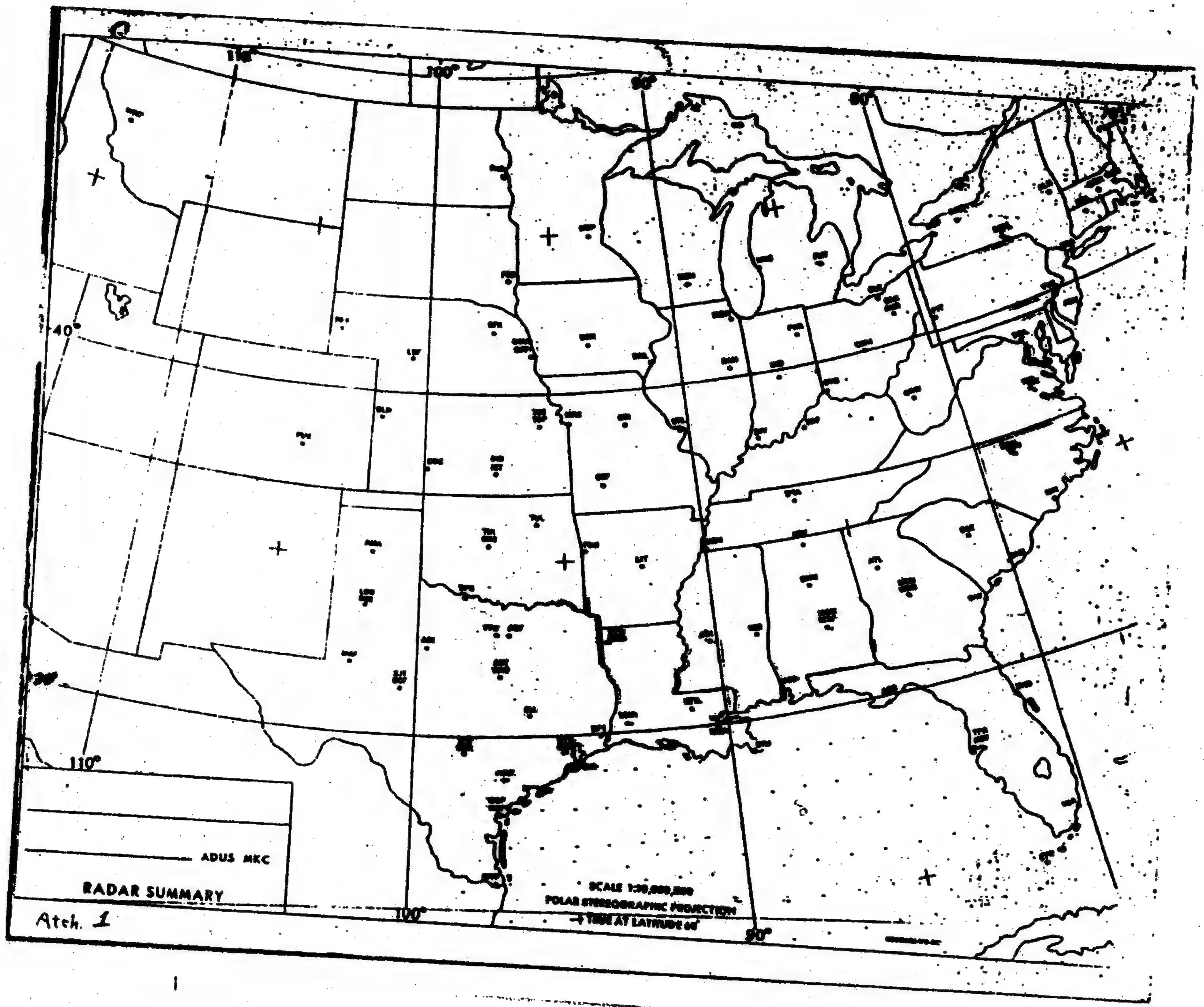
$\underset{\sim}{\underline{hhh}}$ melting level

MOTION

↗ Cell motion

⇗ Line or Area Motion

(barbs indicate speed)


110°
100°
90°
80°
70°
40°
30°
ATL
ADUS MKC
RADAR SUMMARY
SCALE 1:20,000,000
POLAR STEREOGRAPHIC PROJECTION
TRUE AT LATITUDE 60°

Atch. 1

1

HEADQUARTERS
AIR FORCE COMMAND AND CONTROL DEVELOPMENT DIVISION
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
LAURENCE G. HANSCOM FIELD BEDFORD, MASSACHUSETTS

REPLY TO
ATTN OF: CCOW/Maj Eddleman/~~[illegible]~~ [illegible]

[illegible] June 1960

SUBJECT: Staff Meteorological Services

TO: CCY CCC [illegible]
CCM CCR [illegible]

1. The Staff Meteorological Office has been established under the DCS/Plans & Operations. It is manned by a meteorologist attached to AFCCDD from the 4th Weather Group. The purpose of this letter is to describe the functions of the staff meteorologist for your information and guidance in the use of his services. Attached is a letter from ARDC concerning this utilization.

2. The Air Weather Service (MATS) is organized to support the Major Air Commands functionally. The 4th Weather Group at Andrews AFB supports the Air Research and Development Command and the Group Commander serves as staff meteorologist to the Commander, ARDC. Normally, the Weather Detachment Commander at each base will also serve as the staff meteorologist to Air Force units at that base. These responsibilities have been separated at Hanscom Field. The Weather Detachment Commander provides operational, day-to-day weather observation and forecasting support to base activities while the staff meteorologist, under provisions of ARDC Regulation 30-[illegible], provides assistance in:

a. Consultant service and advice to System Project Offices and associated contractors regarding environmental effects on the Systems. Such services and advice are rendered with the assistance of technical personnel available at higher weather echelons and in cooperation with geophysics consultant personnel of the Geophysics Research Directorate, AFRD. These services encompass technical advice on meteorological aspects of test plans, equipment design, systems support requirements, site selections and installations engineering as well as advice on meteorological considerations which have an impact on the economy, relevancy and adequacy of systems and systems concepts.

b. Climatological analyses and studies for the design, development, testing, installation and operation of systems or components of Systems. Such analyses and studies may range from a simple collection and correlation of climatological data, which is available in the comprehensive data files in the office, to a comprehensive analysis which may require several months to complete by use of the data and the electronic computer available only at the National Weather Records Center. A majority of problems will require this machine processing of weather data and considerable lead-time is required for the proper solution of most problems.

Unfortunately, experience has shown that this lead-time is seldom planned for in the presentation of a problem. Therefore, it is desirable to identify as early as possible those requirements for meteorological advice and support. The meteorologist can assist in this identification if he is brought into the early study and planning phases of a program.

c. Coordinating, obtaining and monitoring meteorological and geophysical support pertaining to the Division mission, including procurement of data in accordance with established policy. This includes also the initiation of recommendations on utilization and integration of meteorological support and data in both test and operational phases.

3. The Staff Meteorologist, CCOW, is in Room ~~744~~ 249, Extension ~~521~~ 5715. It is recommended that all echelons of the Division be made aware of and utilize the available services.

GEORGE W. McLAUGHLIN
Colonel, USAF
DCS/Plans & Operations

1 Atch
Ltr, ARDC, 25 Mar 60,
"Util of Stf Met"

HEADQUARTERS
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
Andrews Air Force Base
Washington 25, D. C.

REPLY TO
ATTN OF: RDW

25 March 1960

SUBJECT: Utilization of Staff Meteorologists

TO:
AFCCDD
WADD
AFBMD
APGC
AFMTC
AFFTC
AFSWC
AFMDC
RADC

1. In keeping with the concept of concurrency in managing and utilizing the resources of this command, I suggest that you review the effectiveness with which you employ the Staff Meteorologist(s) assigned in your organization. Officers performing the staff meteorologist function, whether they are occupying designated Staff Meteorologist positions in your headquarters or are performing this function as an adjunct to commanding weather detachments supporting Center operations, can provide you and your staff with considerable assistance in:

a. Formulating plans to provide proper meteorological-geophysical test support for ballistic missile and aero-space vehicles.

b. Ensuring proper cognizance of the effect, impact, and significance of natural environmental parameters on the performance of weapon systems.

c. Developing concepts for providing operational meteorological-geophysical support for ballistic missile and aero-space vehicles.

d. Aiding project officers and contractors in identifying and evaluating requirements for geophysical services in connection with weapon systems development.

e. Reviewing development plans to ensure that meteorological-geophysical parameters are properly correlated with current and anticipated capabilities for their measurement and prediction.

2. Each Staff Meteorologist has been selected for his demonstrated professional capability and specialized training in the meteorological-astrogeophysical field. This background and training permits him materially to assist in the surveillance and determination of adequate environmental support throughout the spectrum of weapon systems development.

3. The employment of Staff Meteorologists through clearly delineated lines of authority and responsibility will stimulate the personal relationships that are needed with all agencies in seeking answers on environmental parameters which are sensitive variables in the performance of missile and space systems. Proper staff relationships between your planning and operations staffs and the assigned Staff Meteorologist(s) permit integration of available resources throughout the development cycle.

Jewell C. Maxwell (Signed)

JEWELL C. MAXWELL
Colonel, USAF
Chief of Staff

Staff Meteorologists' Experiments Supply Data for Aerospace Analysis

Fifty miles above the Eglin Gulf Test Range, a Robin plummeted earthward. The "bird" was transported aloft in an ARCAS (allpurpose rocket for the collection of atmospheric sounding) nose cone, and at the apex of the rocket's trajectory, the Robin (rocket balloon instrument) was ejected. Vapor from a volatile liquid inflated the plastic sphere to a diameter of one meter, and by means of a built-in aluminum "corner reflector," ground radar tracked the Robin during its descent.

From data obtained, staff meteorologists are able to provide wind and density information which engineers use in error analysis studies of the ballistics of larger missiles. The information is also useful in furthering our knowledge of upper atmospheric conditions.

This is but one of many examples which are typical of aerospace problems identified and analyzed by staff meteorologists while fulfilling their function of ensuring concurrent development of meteorological support with that of the weapon system being developed. Hq ARDC, as well as each Division and Center, has a staff meteorologist assigned, with the main responsibility of providing advice on solving meteorological and geophysical aerospace problems.

Heading the group is Col Hazen H. Bedke, staff meteorologist to the Commander, ARDC.

Forecast Weather

Presentations of current weather, as well as the forecast weather conditions, are made by the staff meteorologist of the 6594th Test Wing as an essential ingredient in making operational decisions at the USAF Satellite Test Center, Sunnyvale, Calif. Forecast weather conditions are extremely important in the aerial recovery techniques used in obtaining the Discoverer capsules which descend to earth by parachute after ejection from an orbiting satellite. The staff meteorologist provides one of the key bits of information which influence the "go" or "no go" decision made by the test wing commander.

Using the dry lakes along the X-15 test profile as emergency recovery and ground support sites is dependent upon the dry lake trafficability for aircraft operations. The X-15 and C-130 emergency control craft must be able to use emergency recovery sites, but cannot wait for obviously dry periods since this would appreciably decrease the number of usable sites and shorten the time suitable for testing operations. Staff meteorologists at AFFTC worked out an "open" and "closed" condition indicator which enabled them to apply rainfall and soil trafficability to similar dry lake locations.

Gas Diffusion Study

Radioactive Argon 41 is one of the toxic effluents which will be released from the 200-foot stack at the Air Force nuclear engineering test facility at Wright AFB. The WADD staff meteorologist completed an extensive study on gas diffusion expected from the discharge stack. Before the reactor could be operated the hazard to the

Checking a tape to be used in the B-15D Bendix digital computer for reducing upper air temperature, humidity, pressure, and wind data from Atlantic Missile Range weather stations is staff meteorologist Lt Warren A. Ruefer.

Weathermen at AFMTC load an ARCAS rocket into launcher. Inset shows the Robin, one of the nose cone payloads.

surrounding population had to be determined. A micro-meteorological survey demonstrated that the nuclear engineering test facility could be operated without hazard. Results of these efforts also established conclusively that the costly construction of storage tanks for the retention of radio-active gases, while undergoing decay, would not be necessary. This meteorological consultant service saved the Air Force both time and money, and contributed to preservation of the good will of the surrounding community.

Providing engineers with salt spray information which can be converted into estimates of metal equipment corrosion and electrical connections is one of the items of advice provided by the staff meteorologist at AFMTC. Medical glass slides are exposed at the weather observation site and after specified periods of exposure, a weather observer takes the slides to the base chemical laboratory. Each slide is placed in a measured amount of distilled water and an electric current is applied to the solution. By means of a "solu-bridge," the electric measurement can be directly converted into a measurement of salinity, helping missilemen to protect delicate precision instruments from salt spray corrosion.

Flight Behavior Studied

Advice on determining the best method of measuring meteorological parameters necessary in the evaluation of the flight behavior of Minuteman in R&D flight tests was provided by the AFBMD staff meteorologist. Engineers required data on time histories of mach number and dynamic pressure in order to evaluate flight behavior of ballistic missiles, particularly the second generation missiles with higher performance charactreistics. The choice of methods available was either a measuring system consisting of a sensing boom extending from the nose of the missile, or one in which measurements could be obtained from rocketsonde and balloon borne radiosonde instruments. The analysis performed by the staff meteorologist showed that greater accuracies could be obtained by the use of the latter measuring system. This assured not only fewer flight tests to establish missile performance, but also decreased the on-board missile weight and eliminated the requirement for additional telemetry channels.

improved procedures for rapid, accurate and economical processing of upper air data for use at the Atlantic Missile Range are now in effect due to the efforts of staff meteorologists assigned to AFMTC. Techniques and procedures developed by the staff meteorologists employ a medium capacity electronic digital computer which, through a system of automatic data processing, achieves a more accurate and detailed analysis of observed data than can be accomplished by manual techniques.

Meteorologist Key Link

The staff meteorologist is one of the key links in the problem-solving cycle which serves to find answers to unusual aerospace enigmas. His procedure is to first identify and then formulate the meteorological or geophysical problem. Once the problem has been specified, resources of the technical sections of ARDC, as well as those of Air Weather Service, are used to arrive at the best solution. Noteworthy in the ensemble of environmental problem-solving agencies are AFRD's Cambridge Research Laboratories, AFCCDD's Directorate of Technology, AFBMB's Space Technology Laboratories, WADD's Directorate of Advanced System Technology and the Scientific Services Directorate of Air Weather Service.

Colonel Hanns H. Bedke, ARDC staff meteorologist.

WADD METEOROLOGICAL OFFICE

The WADD Meteorological Office, WCS/Plans and Operations, WADD, is responsible for coordinating and monitoring meteorological and geophysical requirements pertaining to the WADD mission. [illegible] provides technical interpretation of climatological data and studies, and meteorological advice which may be required to exploit the effectiveness of systems or equipment under design study or development, and test planning, operations, etc. The Meteorological Office is located in Room 201, Bldg. 12, Area B. The extensions are 32254 and 32351. ([illegible])[1]

[1] Extracted from WADD MANAGEMENT HIGHLIGHTS dated 27 October 1960.

~~FOR OFFICIAL USE ONLY~~

Atch #

C O P Y

[illegible]

SUBJECT: Meteorological Support at WSMR

TO: Commander
Air Force Missile Development Center
Holloman Air Force Base, New Mexico

1. For an extended period of time, there has been some confusion and duplication in the furnishing of meteorological data for the support of missile firings and related activities at WSMR. It is felt that such duplication is wasteful of men and equipment, and must be eliminated.

2. Considering all factors concerned, it has been decided that as soon as practicable, but no later than 1 month from this date, all meteorological support for all customers of WSMR for missile firings and related activities will be the responsibility of the Signal Missile Support Agency as a part of its mission in furnishing support to WSMR. It is intended that this is a permanent long-range solution.

3. It is requested that the Air Weather Service continue to provide normal air base weather service, including flight and weather forecasting, severe weather warning, climatological and special studies and staff meteorological support to the CO, WSMR.

4. It is emphasized that this decision has been made only for the purpose of efficiency and not due to any dissatisfaction with the fine support rendered by the Air Weather Service.

J. G. Shinkle /s/
J. G. SHINKLE /t/
Brigadier General, USA
Commanding

C O P Y

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D.C.

REPLY TO
ATTN OF: AFOWX

SUBJECT: Program for U.S. Army Meteorological Support

25 November 1960

TO: MATS

1. Reference our letter, subject as above, dated 2 November 1960.

2. This letter confirms a Department of Army decision to assume meteorological support responsibilities for the White Sands Missile Range. This transfer will be initiated as soon as possible and be completed by 1 August 1961.

3. MPW 63-1 will reflect necessary manpower readjustments.

FOR THE CHIEF OF STAFF

James T. Seaver, Jr. /s/
JAMES T. SEAVER, Jr. /t/
Colonel, U.S. Air Force
Assistant for Weather, DCS/O

Copy to: AFOMO